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Abstraction, technology, and power

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ABSTRACTION, TECHNOLOGY, AND POWER

by

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Abstract

The work's central question is how technological designs affect the political power of individuals. This discussion supplements claims that more democratic control over the design and deployment of technology is necessary; it does so by showing how the general tendency toward parametric designs creates *technological delegates:* artifacts to which we inadvertently delegate our political powers. "Delegation" in this sense is the central theme. It is developed in the context of recent philosophy and sociology of technology, as well as ecofeminism and the existentialism of Gabriel Marcel and Martin Heidegger.

A distinction is made between live and dead abstractions (chapter two); delegation to technologies is an instance of the latter. A live abstraction is one that tends to connect with its derivational and practical context; a dead abstraction is understood as complete in itself. This distinction is developed primarily from Husserl's late work, in which separation of science from its origins in the lifeworld is identified as a crisis.

Technology requires philosophical attention because it mediates our activities and relations with other humans and non-humans (chapters three and four). A significant change in how we do things must be a change in technologies.

It is argued that engineering design typically proceeds by means of parametrization: a problem or sub-problem is reduced to a set of parameters (chapter five). This abstraction is reproduced in the designed artifact, such that the user encounters the world as an abstract problem. It is in this sense that some technologies create an inauthentic relation with the world. The consequence, it is argued, is a loss of political power (chapter six). Delegate technologies hide large networks of human and non-human others behind their parametric interfaces. We appear to live more independently with technological help, but in fact we only hide our dependence. Technologies that make dependence explicit are recommended instead.

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Contents

Chapter 1

What shall we do next?

Many technologies separate us—you and me—from each other and from the world; and this weakens us. These are the claims I shall explicate and defend.

Often, I think, one has a gut-level reaction to such claims, either for or against. No doubt there are good reasons for either feeling, and we should take this as an impetus to further, more critical reflection. Some will like the sound of my opening words, and want to accept them without further investigating their meaning. Some, on the contrary, will want to label my thesis as "romantic", and thereby dismiss it. I hope, though, to stay with our discussion until the sense of my claims becomes clear.

But when talking about technology, perhaps because a way of life is at stake, it is not easy to avoid the heavy charge of romanticism, so let us try right away to get past this obstacle to critical discussion. My best defence may be to accept the label: yes, I am a romantic. The term applies to me not just in one sense, but in at least two. First, I am claiming a sort of inauthenticity for certain activities: particularly certain technological ways of doing things; I must, then, be opposing this inauthentic way of acting to a more genuine one. Second, and on the other hand, I am very much impressed by the achievements of our technology, and think there is something exciting and novel about it. Now, I suppose that both the fear of technological inauthenticity and the love of the "gee-whiz" in technology could be called romantic. I see nothing wrong with being romantic in either sense.

Let us look briefly at why the word romantic carries such weight here. There seem to be two

possibilities. One is that "romantic" is meant to censure those who jump to conclusions out of a sort of naive nostalgia or excitement—a naive love for some sort of pure state. Here, romanticism is a species of uncritical thought, and to show that someone is romantic, one would have to deal with both an argument and a personality: one would need to show that the argument is wrong, and one would also need to show that the bad argument came about because of a subjective, emotional state: some love of the past or blinkered devotion to progress. It does seem that romanticism in this sense is a bad thing. However, it is also the case that the culprit's romanticism is here irrelevant to the status of his or her argument. If I am a romantic in the present sense, then that means I have made a mistake: what needs to be done in order to discredit my conclusion is to show the fault in my argument. So, when used to indicate uncritical nostalgia, the term romantic appears in discussions of technology as a subtle sort of ad hominem, and is really only a substitute for genuine discussion.

Another sense in which "romantic" might be deployed is as a simple classification. A romantic position would be any that refers to a more authentic or pure state; it could be a state towards which we are progressing, or one away from which we have fallen. Now, that a conclusion is romantic in the classificatory sense is not any evidence against it—not, that is, unless we have reason to think that all such conclusions—all conclusions that are romantic in the sense of stressing a more authentic condition—are necessarily flawed for that very reason. I have never seen a proof for such a thing, and I do not believe that one exists, but let us consider briefly why one might be inclined to think that romanticism implies error—again, setting aside the purely rhetorical sense of the word, in which calling someone romantic is little more than an expression of disagreement.

Let us consider romanticism of the Rousseauian sort, of the sort that sets up a past state as more authentic and superior to the current one. The basis of the general argument against it is simply this: we can easily recognize a large number of benefits to our current ways of doing things. Our current technologies give us a great deal; our current lifestyle is in some clear ways much superior to other, historical lifestyles. Someone who is sensitive to these facts is liable to suspect any romantic conclusion insofar as it seems to overlook them. And, indeed, there is perhaps a species of romanticism—call it naive romanticism—that concludes that some past

state, or some future state to which we could only progress through science and technology, is in all ways superior to the current one. Indeed, it seems obvious, on consideration, that to hold that *any* period in human history—past, present, or future—is in *all* ways superior to any other, or in all ways inferior, one must overlook a significant number of details.

So let us set aside the naive romanticism that sees only evil in the advances of technology and of civilization, and also the naive romanticism that sees only good in them, and instead note the alternative: we should expect that in some ways our current state is better, and in some ways it is worse, than any given state in the past (or future).

This opens the door to a sort of enlightened romanticism (let us call it). There are good reasons to think that *certain* aspects of historical and even primitive lifestyles were superior. For example, some anthropologists have concluded that "tribal cultures... managed to avoid most of the problems that threaten contemporary civilization."[1] Hunter-gatherers living in relatively marginal areas in the twentieth century were able to provide for their needs with surprisingly little effort, spending far less time "at work" than either a typical modern city-dweller, or, even worse, a labourer in a 19th century industrial setting, or a peasant in the late middle ages—although, again, peasants had far more holidays than today's North Americans. "Even remnant hunters such as the Bushmen, who survived in extreme and marginal environments, were not eking out a precarious existence...; instead, they devoted only a few hours a week to subsistence and suffered relatively little seasonal scarcity... seemed to enjoy good health and long lives... [and] had the good sense to maintain their wants at levels that could be fully and continuously satisfied without jeopardizing their environment."[2] Problems of environmental over-exploitation and degradation seem to go hand-in-hand with large-scale civilization, and in recent years have appeared to more and more people to have some connection to the powerful, resource-hungry technologies on which much of our current lifestyle is based.

What these observations suggest is that a kind of romanticism may be appropriate. Now, if that romanticism is to include *only* the claim that in some ways (and only some ways), people now are worse off than people were at some time in the past, the category is uninteresting. As I take it, any critical examination of two time periods will find such a thing. Instead, I have

[1] Bodley (1996), p. 2.
[2] ibid., p. 17.

suggested that a romantic thesis will count as such if it includes some notion of authenticity and inauthenticity. I shall argue that this is indeed a useful way of understanding how some technologies mediate our relations with the world: some technologies lead us to take up some inauthentic relations. This kind of claim—that the current state of things is in only some ways worse than past states, that there is a pattern to at least some of the ways in which it is worse, and that this pattern has something to do with inauthenticity—I shall call enlightened romanticism[3]. Another sort of enlightened romanticism would note something positive towards which our technological and civilizational advances (at least some of them) tend to lead us. Although this will not be the focus of my discussion, I mention it here because I think it would provide an important adjunct to the claims I am making. If it is naively romantic to take the new powers of technology to be its defining feature, and moreover to be the proper destiny of human society, then a parallel, enlightened form of romanticism would recognize that new technologies do indeed open up new creative possibilities: they open up new ways of being and of acting; they open up new possibilities for art, for cultural creation. To take a simple example, the invention of the piano-forte in the eighteenth century (and its subsequent development) led to a vast amount of music that could not have existed otherwise. Some of this music—Beethoven's late piano sonatas, for example—I believe, is easily recognizable as standing among the great human accomplishments.

What I shall attempt to do is to defend a version of enlightened romanticism, of the sort that claims a kind of inauthenticity caused by technology. This is another way of putting my claim about separation—that some technologies separate us from each other and our world. The word "some" here should serve as a flag that the claims are not intended to be universal, overwhelming, and uncritical—and, I hope, will serve as a defence against those who would wish to refute such claims merely by providing a counterexample: "what about *this* benefit, from *this* device?" I take it that any study of technology must recognize good effects of technologies as well as bad ones—both of each particular technology, and of broader technological trends.

[3] "Enlightened" in that it does not naively ignore the benefits of our current way of life; this is of course a rhetorical move meant to defuse the purely rhetorical use of words such as "romantic" and "naive romantic".

1.1 On my question and my audience

I want to approach this problem from an explicitly, intentionally mundane angle. My hope is that what I offer here will be useful as a sort of tool, a tool to help answer a simple sort of question: "what shall I do this afternoon?" or "what shall you and I do next?" Now, these are questions that can come up in myriad ways. They can come up in ways that have to do with money, with friends, with cleaning the house, or with hobbies. Some days, they don't come up at all: what we have to do is already decided on. But, sometimes they come up in what we could call a practical political way. Here, I must assume that you, my reader, have a certain kind of concern. My goal here is not to motivate this concern, but to speak to those who already have it: some of us run across the concern, "what shall I do next?" given that I have certain political interests, given that I have certain dissatisfactions with the status quo, given that I am concerned, perhaps, with injustices, with broader political states of affairs, with narrower community states of affairs, with environmental issues, with gender issues, with whatever sort of politics I feel moved to be *active* about; this is meant as philosophy for activists.

There are three levels at which one can approach such issues (there are other ways to break this down, no doubt, but this is one). One can ask questions about *utopia*: one can say, "what would the ideal situation be?" If the world were as good as it could be, then in this best of all possible worlds that we can imagine, what then would be the situation: what technologies would there be, what would be our relations to one another, how would technologies mediate them?

We can also ask about *policy* in the present. Given our current imperfect world, how ought governments, businesses, institutions of whatever sort to behave? What sorts of decisions are appropriate in the present to move us toward that Utopian state, or to address current shortcomings?

The third level of investigation has to do with the question: "what to do right now?" asked not as a policy-maker, but as an individual, a family, or some other group of people who might have an interest in moving society, or at the very least, moving their own life toward the Utopian state that one might imagine. What *action* is called for?

Now, if that sort of concern is present, in an individual or in a small group, the chance may sometimes arise to make decisions that will have significant impacts politically—at least

we would *like* it to be so: part of the problem that I want to address here is that the chance so seldom seems to arise, at least for those of us not in specific positions of power. What I am writing here is thus not aimed at policy-makers; it is not aimed at people that have the power to set or directly influence policies that affect a large number of people. It is aimed rather at individuals or groups who may be struggling to effect policy changes, or to effect in some other way changes in their lives, in the lives of their community members, country members, of others in the world. There may be something of use here for policy makers; there may even be something of use here for those who would rather maintain the status quo—but this is not the audience for which I am writing.

These three levels of questioning—utopia, policy, and action—are interrelated, and any discussion of one is of course going to forward and draw on the other two. But it is only the third, perhaps simplest, and perhaps most mundane kind of question that I wish to address directly here.

Let us look at two reasons for my focus on action, on the "what shall I/we do now?" kind of question. One is that technologies pervade our everyday life, and so most of the time what I do on a given day is greatly influenced, even determined, by the technologies with which I have previously chosen to live and work (in chapter 3 I shall begin to take up this topic in more detail). So, thinking about what to do with our time can, insofar as it leads us to confront the technologies we use on a daily basis, lead to significant change in the way that we lead our lives. It is also, after all, the only question that we need to answer sometimes. I can make plans for tomorrow, but I need to decide what to do right now. On what project will I embark right now, say, this afternoon; now that I have done what I needed to do this morning, I have a choice as to how to spend my time, beginning now: how will I do it?

The other reason has to do with why I shall sometimes focus on the question, "what shall *I* do?" rather than, "what ought *we* to do?" There is a certain common sense of the word "we" that appears in normative discussion: it is the "universal" we, a reference to everybody as a collective actor. It is often said, for example, that "we" ought to be doing more about the environment. In fact, there are many people doing different things at any given time, and many non-humans doing things as well (see chapter 4). These various actors (the human ones at least) have various interests. These interests are sometimes congruent and sometimes opposed. While each of us can

make decisions about what to do, including who to act with, very few of us are ever in a position to make decisions about what many people will do—about what "we", in the universal sense, will do (see chapter 6). In talking about individual decisions in this way, I do not mean to take an overly individualistic view of human action. Much of what we do, we do with others. More than this: as I shall argue in chapter 4, *all* of what we do, we do with others, human and non-human. And in deciding what to do next, my decision may well involve groups. I have no objection to the local "we" that refers to you and me, or to my family, or to me and my friends, etc. Perhaps a pair of us, a small group of us, maybe even a mid-sized group will come together to make a decision from time-to-time. Here, the line between individual decisions and policy begins to blur. That is one reason why the decisions I am talking about may well apply at the policy level as well. But I am more interested in the small-scale level, because that is where my political power has to begin, whether it is acting alone or with some dedicated group of partners on an issue. I do not have the option—only those with large amounts of coercive power have the option—to determine such questions for "us" in general.

1.2 Philosophies of Technology

Philosophers of technology have offered a number of taxonomies of their theories.[4] Without meaning to detract from these ways of classifying things, I shall offer my own. I think that today, the scholarly terrain is perhaps best understand in terms of a single main distinction, between the "old school" and the "new school", let us call them. The old school included such figures as Martin Heidegger, Jacques Ellul, and their adherents and opponents. Both Ellul and Heidegger[5] have been taken to argue for technological determinism (whether or not—and it can be doubted—either Heidegger or Ellul did advance a clear instance of this theory is not a question that need concern us here). The claim that is attributed to them is that technology is a historical force over which human subjects have no power: the course of history is determined, now, by technology. This view of technology can be contrasted with an opposite one, that sees technology as morally neutral and as compatible with human freedom—as merely so many tools that we can invent,

[4] See, for example, Feenberg (1999), p. 9; Borgmann (1984), ch. 2; and Mitcham (1980).

[5] I shall shortly have more to say on Heidegger's theories.

take up at need, and dispose of when convenient: "we can explore the heavens with it, or destroy the world. We can cure disease, or poison entire populations. We can free enslaved millions, or enslave millions more. Technology spells only possibility, and is in that respect neutral."[6] These extremes tend to be associated with evaluations: technological determinism tends to be associated with a dystopian view of technology, with its negative aspects emphasized—not least its control over us: "In our times, technical growth monopolizes all human forces, passions, intelligences, and virtues in such a way that it is in practice nigh impossible to seek and find anywhere any distinctively human excellence."[7] The view that technology is neutral tends to be accompanied by a positive evaluation of technology: it is the means by which we have improved our tools, so that we can now be richer and happier than ever before: "our technical prowess literally bursts with the promise of new freedom, enhanced human dignity, and unfettered aspiration."[8]

The new school tends to work by rejecting the assumptions of the old school, and tends to come to more modest conclusions. A good representative is Andrew Feenberg, who positions himself against the determinist streams of technological theory—while, at the same time, rejecting the notion that technology is entirely neutral. The new school tends to shun claims about "technology" in favour of ones about "technolog*ies*". It tends to hold that *particular* technologies may determine or at least constrain the way we encounter the world and each other, and that they embody certain values. If I work on an assembly line, for example, my interactions with other workers and with management are constrained in part by the technology with which I work, in a way that favours a certain sort of management-worker relationship.[9] This—that particular technologies constrain us, and that how they do depends on their design—is one thesis that characterizes what I am calling the new school.

Another is that the design of technologies is not determined in an automatic or universal way. Rather, the technologies we end up with are the result of social processes that select among many possible interpretations of the artifacts. The term "social constructivist" is sometimes used for those scholars who emphasize this contingent aspect of technology: they investigate how various

[6]Mesthene (1972), p. 111.
[7]Ellul (1972), p. 90.
[8]Mesthene (1972), p. 111.
[9]cp. Feenberg (1999), p. 87.

actors work to define the problems and shape the designs that, eventually, become standard. In a classic study of the development of the bicycle, for example, Trevor Pinch and Wiebe Bijker note that different understandings of bicycles co-existed for a time.[10] Some people saw bicycling primarily as a manly sport, while others saw it as a means of travel. To the first group, speed was a key engineering problem; to the second, safety was the issue. Different strands of development corresponded to these socially-constructed meanings: "ordinaries", with large front wheels, and the more balanced "safeties". Bijker and Pinch argue that "a problem is defined as such only when there is a social group for which it constitutes a 'problem'."[11] There was no such thing as a "good" bicycle independent of the social groups that define these problems. Eventually, the technology stabilized, and the general outlines of the design were no longer contested. When this happens to a technology, "its social origins are quickly forgotten... the artifact appears purely technical, even inevitable."[12]

Because of their emphasis on contingency, these constructivist investigations can give the impression that there is great deal of freedom for all those involved, at least before a design crystallizes and comes to seem inevitable. Feenberg is a kind of constructivist, but he emphasizes that technology in design and in use has political aspects. He has help in this project from Actor Network Theory (I shall discuss ANT further in chapter 4). To ANT, technologies involve networks of human and non-human actors. In order to assemble these networks, designers "simplify" the actors; actors are enrolled based on a subset of their possible behaviour. But the possibility remains that an actor may not respect this simplification, and may fail to follow the program; this possibility of resistance is called an "anti-program".[13] Simplification, program, and anti-program make technological networks sites of potential struggle; likewise, actors may struggle over the meanings assigned to technologies before these become stabilized. What we begin to see with Feenberg is the notion that there may be systematic biases to these design decisions. Certainly if technological designs—the kinds of technologies that are developed, and the way they are developed—are the result of a sort of power struggle amongst various members of society, then

[10]Pinch and Bijker (1987).
[11]ibid., p. 30.
[12]Feenberg (1999), p. 11.
[13]ibid., p. 115.

we might expect that the outcomes should favour a certain social structure and a certain segment of society—namely those who were able to effectively wield more power during the development of the technologies in question. I'll return in my final chapter to the issue of technology and power, and also to Feenberg's discussion of it.

1.3 Overview: Alienation, Collaboration, Mediation, Delegation

What is perhaps still under-emphasized in the new school is precisely what served as the greatest strength of the old school, and that is discussion of technology at a fairly general level. Recent studies have tended to shun the monolithic understanding of technology that characterized the old school—but what they offer instead is often very piecemeal. Feenberg criticizes constructivism on this count: "Where the old determinism overestimated the independent effect of the artifactual on the social, the new approach has so disaggregated the question of technology as to deprive it of philosophical significance. It has become matter for specialized research."[14] Feenberg himself offers a refreshingly general but critical account of the possibilities for action within technological systems. But though there are hints, his focus is not on the development and design of technologies. So the new school still lacks any general account of trends in technological design; correspondingly, it lacks a general account of effects on technologies' users. I think we can say more in this regard without relying on a strong sort of technological determinism, or on a one-dimensional notion of what technology is. I think it will be valuable to retain the new school's emphasis on particular technologies, rather than technology as a whole—but we should also look for patterns within the collection of technologies with which we work and live.[15]

My thesis is about one such pattern—one that has, I shall argue, political ramifications—and in particular, one that allows us to make some sense of the old claim of technological determinism. I call it *delegation.* The delegation thesis is roughly this: if we do not wish to negotiate with the world, we can delegate the job to technologies; the artifacts will then handle the world for us; but then both we and the non-human world will appear as passive, and technologies as the only actors.

[14] Feenberg (1999), p. 12.

[15] Albert Borgmann (see section 5.2.1) similarly looks for patterns in technology, and his work has significantly informed mine; nonetheless, Borgmann appears to belong more to the old school than the new, given his interest in "bounding the technical sphere to restore the centrality of meaning." (Feenberg, 1999, p. 189).

The claim of technological determinism is that humans can no longer take effective action; I, too, claim that technology can reduce our ability to act effectively: it is the kind of technology that introduces a separation between us and our world that does so. I see technological determinism as a sort of caricature or exaggeration of this tendency: it is what we would have if this pattern were truly universal. Conversely, delegation is technological determinism minus universalism.

My final chapters will focus on the technical (chapter 5) and political (chapter 6) aspects of the delegation thesis; this thesis depends on three others: the theses of mediation, collaboration, and alienation. Let us now turn to a brief look at each of these.

I owe a certain debt to Martin Heidegger, and I shall begin in a way that makes this clear. Acknowledging debts to Heidegger is out of style in recent philosophy of technology, but I think he is still worth our time. He is easily the most influential and the most reviled philosopher in this field. So far as I can tell, it is not so much because his late style was overly idiosyncratic (and best not emulated, certainly), or because he made some philosophical errors (of *course* he did), or even because of his politics (an excellent reason for caution),[16] that Heidegger is so reviled; his scholarly crime seems simply to be that he is too influential. But Martin Heidegger was just another philosopher, and like any philosopher, should be read critically and with an eye to learning something; let us consider him in this way.

I believe we can detect my four key theses in Heidegger's later writings; this is thus a useful place to begin our discussion. The thesis that technology alienates (or abstracts—chapter 2 focuses on abstraction) is here, as is the collaboration thesis (chapter 4). I find in Heidegger a classic statement of the media thesis, as I shall call it (chapter 3). Also, his work suggests the idea that the alienation of humans, by technology, from collaborative relations, reduces our power—the delegation thesis. Finally, and less happily, Heidegger seems to land in paradoxes (similar problems will recur in chapter 4). I think we can consider the import of the other theses without landing in paradox if we simply reject his loaded definition of technology; we need only replace it with one that allows for both alienating *and* connecting technologies.

[16]See part one of Zimmerman (1990) for a careful look at Heidegger's political and philosophical relationship with the Nazi movement.

Alienation

The German word "Bestand" means "existence", but also "stock", or "inventory". Heidegger uses this word for the sort of existence entities have in the world of modern technology: "everywhere everything is ordered to stand by, to be immediately at hand."[17] As Bestand, all entities lose their individuality and become part of a universal pool of resources; things are not allowed to be what they are, but are instead overpowered and reduced to so much raw material. This is an inauthentic, abstract, way to encounter the world: to see a river as a mere resource, a source of water or power, is to ignore its many other properties, and its relations to many other things. Under the sway of Heideggerian technology, nothing appears in its individuality; instead, everything appears as a source of raw materials that can be extracted, stockpiled, and put to use at will. We are thus *alienated* from the genuine Being of things.

Collaboration

What would a more authentic encounter be like? Heidegger describes how a special class of entities called Things,[18] when encountered as such, allow us to experience the world in its Being. He gives us a list of Things: "the jug and the bench, the footbridge and the plough... tree and pond, too, book and hill... heron and roe, deer, horse and bull... mirror and clasp, book and picture, crown and cross."[19] Things, it seems, are technically simple and have some significance in someone's daily doings. One example Heidegger develops in detail is the jug. Formed so as to pour out a "gift" of wine, the jug has a connection to the rain, the sun and earth which nourish grapes; the wine may be poured as a drink for mortals or as a libation for the gods. In this way the jug captures the interaction of the "fourfold": earth, sky, divinities, and mortals. We need not dwell on the technical simplicity of things, or on the rather mystical notion of the fourfold. What is important is that Things gather together, and reveal the world in its interrelatedness. For Heidegger, an authentic encounter with the world would not be that of a self-sufficient subject encountering objects, but instead an intimate relation between the self and the world. From the

[17]Heidegger (1977), p. 17.

[18]Heidegger (1971a). I will capitalize the word "Thing" when I intend it in Heidegger's technical sense, so as not to cause confusion with all the other "things" of which I speak.

[19]Heidegger (1971a), p. 182.

point of view of action, we might say that there is no achievement in isolation: no one acts alone. From this point of view, then, the significance of Things is their ability to bring *collaboration* to the forefront. When I pour wine from a jug, I am not the only one involved: so are earth, clay, sun, sky, water, grapes, and many others, human *and* non-human; we do it together. This collaboration is precisely what is obscured in the appearance of entities as Bestand.

Mediation

Heidegger does not say that Bestand is the essence of technology. His word for this essence is "Ge-stell",[20] from "Gestell", a frame or rack. A rack is a place ("Stelle") to put stock, and Heidegger's idea here seems to be that if the only place one has to put things is a rack, then those things will have to be treated as stock, or inventory.[21] The essence of technology, Heidegger claims, is that it allows no other category but Bestand: it *makes* us encounter the world as so much passive raw material—our categories are as limited as the shelves of a display rack. This is a version of the *media* thesis: our relations to things are determined by our technology. Of course, for Heidegger, this determination must be understood in a universal way; I prefer to consider the mediations of various technologies individually, even if we can make some important generalizations.

Delegation

It is not just non-human entities that technology causes to appear as Bestand: everything, people included, is affected. In hiding the collaboration of Things behind technology, we become ourselves reduced to passive raw materials—to human resources, as it were. One way of looking at this is as an over-extension of technology: it may be fine to treat mere matter as, well, mere matter, but we have a problem when (and only when) humans get the same treatment. One *could* look at it this way; but, the discussion of chapter 4 suggests that these things are more closely connected: reducing Things involves reducing humans.

I think we can understand this in terms of delegation (it is not crucial here whether Heidegger

[20]Heidegger (1977), p. 19.

[21]I am not aware that this connection has been explored in English work on Heidegger.

would agree to this re-framing). Let us consider an ornamental (but hefty) rock in my garden. I must collaborate with it to get it into a satisfactory position; this involves a dense and fundamentally unbounded set of negotiations between me, the rock, and our environment (chapter 4). The rock is rather like one of Heidegger's Things. If, on the other hand, I just want to get the rock in place, without having to respond to its idiosyncracies, then I shall need some help. Perhaps one of those nifty miniature diesel back-hoes I keep seeing. I shall just have to move some levers, and the machine will take care of the erstwhile intransigent rock. *I* shall not need to negotiate with all the rock's vagaries: the strong metal and diesel power will do that for me. I can *delegate* parts of my task to the machine (a robot would be even better, but that kind are not available—yet). "The machine does all the work," as one TV commercial puts it.[22] But if the machine is doing the work, handling some of the negotiations for me, then my own agency is reduced; to some degree I have given up to the mechanical delegate my own power. In chapter 6 I shall suggest that when we delegate to a technology, we lose political power with respect to networks of actors lying behind the delegate.

I think we can take Heidegger's dystopian world to be an extreme version of this procedure. All action is handled by machines—and so neither humans nor non-humans have any agency left. The result is technological determinism: the course of history is up to technology.

Heidegger's paradox

Certainly, this is not our world, nor is Heidegger's technology our technology—even if there are disturbing similarities. I shall defend the above four theses. But what I think we must drop from our picture are the *universal* claims about technology and alienation.

There are two kinds of universal claims here. First, Heidegger holds that *all* technology is bad; that every technological device alienates; that every one makes us encounter the world as mere raw material. Or, rather, this alienating mediation is the essence of technology: it is what makes something count as technological. Second, *everything* is technological, for the moment. There is no way to encounter Things as such, no kind of doing that is not complicit with technology.

I take this to be false, but I am more interested in showing that believing it gets us in practical

[22]The machine in question is some sort of sander; my modest experience with electric sanders suggests to me that the claim is much more an expression of desire than a literal description.

difficulties. If it were true, after all, it would scarcely matter what you or I thought about it. What would one do? Any action on the matter would be technological; it would be complicit, just as much as inaction. One would need to discover "what sort of power can belong to *no-action* and to *no-technique?*"[23] But if all doing is technological, there can be no resolution of the paradox.

Heidegger himself seemed to swing between extremes, first embracing decisive, violent, even technological action, and then seeming to prefer inaction to complicity with the technological. He writes that the "danger" of technology also holds the "saving power."[24] Heidegger seemed to think that a sort of sublimation, an *aufhebung*[25] (he referred simply to the "event") would occur just when technology reached its greatest intensity. In 1938 he wrote, "only there where the consummation of the modern age attains the heedlessness that is its peculiar greatness is future history being prepared."[26] He may well have been referring here to the Nazi movement, which he supported fully for at least a time: Nazism could be seen as a desperate but determined attempt to create an alternative both to Anglo-American capitalism and to Soviet communism. Micheal Zimmerman argues that "Heidegger believed National Socialism would renew and discipline the German spirit, thereby saving Germany from technological nihilism."[27] But this is the movement behind a world war and the Holocaust; there could scarcely be clearer instances of what Heidegger calls technology: of overpowering things rather than letting them be as they are, of the reduction to mere raw material, the dehumanization implied by Bestand. Heidegger himself said that "only war deploys the true laws for the actualizing of things."[28] But, again, if all doing in our time is technological, then what could be blameworthy in its extremes? Heidegger's stance seems to leave no way to draw lines, to judge some actions as more authentic than others. So one response to the claim, "all doing is technological," is heedless pursuit of technology.

Later, Heidegger seemed to swing the other way: "[A human's] essence is to be one who

[23]Marcel (1965), p. 77; see chapter 4

[24]This way of phrasing it comes from a poem by Holderlin; see Heidegger (1977), pp. 28, 42; Heidegger (1971b) p. 118.

[25]Hegel's term: each stage of history contains a contradiction that eventually forces the advent of the next stage; the old stage is not entirely abandoned, but retained in a new form; this schema is what I am alluding to with the word *"aufhebung"*.

[26]Heidegger (1977) p. 153.

[27]Zimmerman (1990) p. 34.

[28]quoted from a 1933 political speech in Zimmerman (1990), p. 68.

waits."[29] He speaks often of "thinking", which is likened to sowing seeds without any guarantee of a harvest; but, "before the sowing comes the ploughing... It is a matter of first having a presentiment of, then of finding, then of cultivating, that field."[30] We seem to be several steps removed from *doing* anything now. And indeed, if all doing is complicit in the sway of technology, then we should perhaps do nothing: just think, and wait.

In chapter 4 I argue that we should not be satisfied with an unresolved tension between poles: either there is some principled way of balancing the terms, or we have not a tension but an indifference. The problem with Heidegger's paradox, so far as I can see, is precisely that there is no principled way to choose one course of action or another: it is all technological (and technology is all bad in the same way). Do whatever: it doesn't matter: whatever you do will be of the same kind. Thus it is difficult to argue that I ought to do one thing rather than another, so long as we take technology to be universal.

We should, then, reject the claim that everything is now technological (and if we are wrong, it could scarcely matter). But what of the claim, or rather the definition, that all technology is Ge-stell, i.e. that it mediates in an abstracting, alienating way? Let us assume that there are modes of doing that do not have this characteristic. Our task would then be to distinguish between technology and some other kind of doing—let us call it "art" (as does Heidegger). This is not my approach: I shall consistently suggest a division *within* technologies. At a certain level, this is a strictly terminological difference: take any bit of technology; if it does not alienate, its use would in Heideggerian terms be called art, in my terms technology that does not alienate. But my terminology has a simple advantage that helps with a complicated activity: it allows us to use the word "technology" in whatever way seems natural, and this helps us pay attention to the details of what various technologies (and other practices) actually do.

The universal definition, "technology = bad" can lead to the very sort of abstraction I wish to avoid; this will become more clear in chapter 2. Roughly, the making of universal claims must involve the suppression of some concrete details—the abstraction away from them—and this abstraction can be, in some circumstances, of the same kind as the abstraction from our world that technology can instigate. For this reason, I want to reject Heidegger's universal definition—

[29]Heidegger (1977) 42.
[30]Heidegger (1977) p. 55.

even while keeping the notions of mediation, collaboration, alienation, and the loss of agency that may result when we delegate our negotiations to a technology.

Heidegger and others of the old school insisted on separating philosophy from technology, which was seen as a self-contained realm. Technology is bad; technology threatens to determine human destiny; it is philosophy's duty to escape from its sway. If, given these assumptions, a philosophy were to be a kind of technology, then it would simply fall into the same historical patterning that the rest of technology displayed, and so would be of no use as therapy for those problems. The one general outcome of such reasoning was that philosophy could not be allowed to be practical. This is of course highly paradoxical for a philosophy discussing technology, which is, after all, a way that people do things—and for a philosophy that seemed to have something to say about what we ought to be doing. My approach will be to take the practical focus of our questions at face value, along with the practical aspect of technology. Both philosophical and technical discourse can be about ways of doing things. The sciences, practices, and methodologies of engineering make prescriptions about how to do certain things. Likewise, practical philosophy makes prescriptions about how to do certain kinds of things. In the most general sense, then, technology—or rather, the practical-scientific knowledge and methodologies that underlie it—is not clearly divisible from practical philosophy; the boundary between the two is fuzzy. This is particularly so when the philosophical questions bear on the way in which things are designed. The kinds of claims I am making here do indeed have implications for the design and selection of technologies.

In this sense, what I am doing may in places be technological; it is also philosophy, simply because it takes an explicitly reflective and general stance. The line at which doing philosophy of technology runs into engineering, the doing of technology itself, I think has to remain vague. At one pole, there is philosophy of the fairly general sort, which I pursue here. At the other pole is highly specialized technological know-how. For example, the rules of particular programming languages lie at the specialized pole. In between, slightly more general, lie theories about how to program well. Those are questions usually tackled by technologists, not philosophers—but they begin to appear philosophical as the scope of the question broadens. For example, in the area of human-computer interface design, questions arise as to why programs ought to behave in certain

ways, given certain human goals. At a broader level still, we might ask about why those human goals and not others are ones we ought to be designing for. In this way, we eventually end up with the most general questions about technology, which are simply questions about how it is best to go about doing the things that we need or love or ought to do.

My point is of course not that technology is indistinguishable from philosophy. Philosophical practices may have significant features in common with technical practices; they also have significant differences. My point is rather that it is a dangerous methodology to first delineate the boundaries of philosophy of technology, as distinct from technology—and then to restrict one's inquiry to that pre-determined realm. Such an approach is liable to chop up issues where there are no clean articulations in the subject matter, or to rule out important questions. Such dangers may arise in any kind of investigation, but they are acute in the relationship between practical philosophy and technology.

What, then, is my goal here? It is not to say something about all technology. It is not to say something about what policies ought to be put in place regarding technology. My goal is simply to find ways in which you and I can become more effective political actors in our world, given the sorts of technologies around us that we may choose to work with. I hope to do this by raising a certain kind of question: a question about abstraction, or separation, and its effects on our power. This is a question that I shall not attempt to answer once and for all. While I shall have cause to discuss certain technologies, and suggest that some—cars for example—may be a bad idea for many of us, I do not presume to prescribe for all others what technologies are good and bad; this would have to do not just with the questions I am raising here, but with others as well—perhaps in including such mundane questions as what time commitments and monetary costs are involved in doing things one way rather than another. What I want to do is lay out a kind of question that I think you and I can take to the technologies we work with—and with this question as a tool, a sort of optical aid, change some of the things we do.

A discussion of this sort, then, makes certain requirements on my readers. First, it requires that my more sceptical readers set aside any reaction they may have against my admitted (but enlightened!) romanticism. But beyond this, it seems to me that I am writing for people who share some of my concerns, and that those who share few of them will find little of interest here,

regardless of agreement or disagreement.[31] So I suggest to you, my reader, that as you read, you keep in mind always—as I have attempted to do while writing—the question of what you are going to do today.

[31] The possible exception is the material of chapters 3 and 4, which, I believe, may pose challenges for traditional theories of action.

Chapter 2

Abstraction

Let us begin with abstraction. This notion applies in many areas, of course. The present chapter will consider abstraction in a fairly general way; we will later apply the notion to technology in particular. Our main goal will be to make an evaluative distinction: there are live abstractions (which are acceptable and useful), and there are dead ones (which are dangerous).

2.1 Some notes on terminology

"Abstraction", here, is meant in the sense in which one may "abstract *from*" something: abstraction is in play when we leave out of consideration some detail or details. The abstract is opposed to the concrete: we consider something concretely when all the details are "in". Abstraction and concreteness are two poles, and we can speak of degrees of each. So far as I can tell, there is abstraction unless the whole big messy world is in consideration, in all its dimensions; the concrete, then, is the actual.

2.1.1 Vagueness, ambiguity, and abstruseness

Abstraction is neither vagueness nor ambiguity nor abstruseness. To avoid confusion, let us briefly consider each of these in turn.

How tall must one be to count as a tall person? The impossibility of a precise answer is due to the vagueness of the concept "tall", not any abstraction in the present sense—though if

we speak of someone only in terms of height, we are of course abstracting from his or her other characteristics.

Something is ambiguous if it is open to more than one interpretation. Abstraction from context can produce ambiguity—whether the bank in question is of the geological sort or the financial is generally clear in context—but the two are different. Consider, for example, what results if we define a "bank-referent" as anything one properly calls a "bank". Notice that "bank-referent" is an abstract term, in that it abstracts from the issue of why the term "bank" applies; but notice also that it is *not* ambiguous, since it is precisely defined above. Ambiguity, then, is openness to interpretation, while abstraction is indifference to detail.

Like ambiguity, abstruseness—i.e., difficulty or complexity—is correlated with abstraction but is distinct. While these terms are perfectly good dictionary synonyms, we should keep them apart here.

2.1.2 Synchronic and Diachronic Abstraction

Among the many ways in which one can abstract, it may be useful to recognize two dimensions—call them synchronic and diachronic abstraction. One can abstract from the details of the present situation: from properties of objects, from irregularities of shape, from relations material and social, etc. But one can also abstract from the history (and future) of the situation: one can consider the locations of things apart from how they arrived there, and the qualities of things apart from how they developed. The concrete, then, is detailed, contextual, and historical.

2.1.3 Abstraction, separation, and alienation

I use the terms "abstraction", "separation", and "alienation" interchangeably in most of this discussion, though there are differences in emphasis. "Abstraction", I think, captures what underlies the other terms. To treat related things as separate is to abstract from their relations, and also from the details that are involved in their interaction. Conversely, any abstraction can be described as a separation between what is abstracted and what it is abstracted from. More particularly, to treat, say, me and the rock in my garden as separate requires abstraction from the details of our collaboration (see chapter 4). This sort of separation—between one's self and something

to which one is or ought to be related—we can also call alienation; this word seems particularly apt when the abstraction is not entirely voluntary. When I refer to separation or alienation, it will generally be in the context of practice, rather than ideas or terms.

Now, this notion—abstraction in practice—may sound odd. Everything we do, after all, we do in the concrete world. Nonetheless, we can do things abstractly to the extent that our operations leave something out of consideration—to the extent that we operate in abstraction from some details of context or history (see chapter 3 for more on the notion of operation). Separation and alienation of this sort are always a sort of illusion: they are the result of abstracting from our actual, concrete collaborations—of acting *as if* things were simpler than they are. Insofar as this abstraction affects what we do, though, the effects are altogether real.

We can already start to see, in a general way, why abstraction *might* be a bad thing: if abstraction omits details, there will be trouble if these omitted things matter. For example, our knowledge of ecology suggests that there are complex relations between living things. If we treat the components of this system in abstraction from these relations, our actions may have undesirable effects on not just other living things, but on ourselves. This kind of problem will be serious whenever we abstract from details that are in fact important, and worse when this kind of abstraction is systematic.

2.2 Ecology and separation

I shall look now at three different contexts in which the issue of abstraction comes up. First, there are environmental problems: these are often said to derive from our separation from the natural world. Second come problems with linguistic and symbolic abstraction. And, third, there is the issue of theory becoming abstracted from its practical origins; this, I shall approach by means of a more extended discussion of Edmund Husserl's late work.

First, then, many authors discussing environmental problems point to a separation between culture and nature, or between individual humans and the non-human others around them. Ecofeminists in particular tend to take a position much like the one I mentioned above, i.e. that we systematically abstract from the complex relations between living things, and in a way that is

harmful both to us and to nature. There are a range of positions among ecofeminists as to why this is the case, what the mechanisms or causes of this sort of separation are. In general, though, it is taken to be related to patriarchy and to domination. The idea, as I understand it, is that to take a dominant role is in some sense the same thing whether it is in relation to nature or in relation to another human being—so the domination of women by men and the domination of nature by humans are related, and one way of describing this parallel is in terms of separation. What is it to be a master, to utterly dominate something or someone? In one sense, it is to be free to act as though one were separate from those on which one acts—free to pursue one's projects without regard for others, as if one were the only active force in the world. This may be a way of understanding the ecofeminist connection between domination of nature on the one hand and patriarchy, or domination more generally, on the other: to take a dominant role, one must be separate. Either the separation between human subject and human or non-human object *permits* domination, i.e. is a necessary condition for it, or such separation *produces* domination, or it *is* in itself domination. In any of these cases, domination implies separation.

2.3 Language and abstraction

Now, let us look at how abstraction can be an issue with respect to language, or symbols more generally. A symbol, or a linguistic term, can act as a sort of delegate for that which it represents: when we work on symbols, we are working with delegates, rather than directly with the things themselves, and those symbols inevitably abstract from the things represented, since they do not indicate all of the details, context, and history of the things represented. Much problem-solving today is carried out in this manner: people work with numbers, models, representations of a situation, and make decisions based on these representatives; the decisions are then applied to the things represented. Hence, for example, we often hear the complaint of being treated by bureaucrats as "just a number".[1]

This sort of delegation is a kind a mirror image of the kind of delegation that is my focus. My argument is that technological devices can serve as delegates which we interpose between

[1] Engineering problem-solving is another key example, to which we shall turn in chapter ??.

ourselves and the world. By delegating our actions in the world, our negotiations with the world, to a technological device, we hide the fact of collaboration; we abstract from it. Symbols and linguistic terms, on the other hand, can hide our collaboration by abstracting from that which they represent. In automated systems, these two kinds of delegation come together. We can delegate to a computerized system control of certain aspects of the world by manipulating symbols on that computerized system. Symbols and technological delegates share the characteristics of disposability and pliability.[2] Both symbols and devices let us appear to act in isolation from what we are acting on through them; they both allow for action that appears independent of the details of our collaboration.

2.4 Abstraction and Crisis

Let us turn now to some of Edmund Husserl's later writings, and the way that abstraction is an issue in his thoughts on how we constitute ideal objects. In particular, I want to focus on the *Crisis*,[3] and one of its appendices, "The Origin of Geometry".[4] This is an appendix to which Jacques Derrida wrote a challenging introduction,[5] and we shall have to look at Derrida's critique of Husserl after I present Husserl's own account.

In the "Origin", Husserl's central problem is the relation of *ideal objects* to their origins in a *historical* subjectivity. An ideal object is an object independent of a particular person, and knowable exactly by anyone: it can be grasped by anyone in precisely the same act of understanding. An example would be a triangle. The triangle is not a sensible object; it does not exist in the material world, but nonetheless, we can in some sense know what the triangle is, know things about it—and we can discuss this knowledge with others. The triangle thus has a sort of independent but immaterial existence. Here, of course, we are talking about objects of thought. An object of thought must always be constituted, i.e. built up by some sort of cognitive, mental, conscious or unconscious process—we might say that only the "output" of such processes is available as objects of thought. Husserl always tries to avoid the metaphysical question of whether there is

[2]These are Albert Borgmann's terms; see 5.2.1.
[3]Husserl (1970).
[4]ibid., pp. 353-378.
[5]Derrida (1978); Husserl's "Origin" is included in this volume, pp. 157-180.

something in the world that corresponds to this object of thought, and what the nature of that thing might be. At the time of the *Crisis* and the "Origin", Husserl was concerned with how such ideal objects come into being: how could a constituted but universal object like a triangle, or a system of ideal objects like geometry, first appear in human history?

There are two aspects to this question. The first is how idealities are constituted, i.e. how, from the sensible, concrete world, it is possible for a human subjectivity to come up with something like a triangle—something which is both abstract and exact, in a way unlike anything in the everyday lived world. The second question is how these idealities can overcome their subjective origins. If it was one person, historically, who first came up with the idea of triangle (or perhaps there was one person in each of a number of communities who first constituted this ideality—it makes no difference to the question) we then have the question of how the notion of triangle became common property, a notion accessible in the same way to everyone.

2.4.1 How to constitute an ideality

Husserl's story begins with the characteristics that the pre-scientific, pre-geometric world must have had. He speaks of "that apodictic aspect of the prescientific world... which must have served as the material for [the founding geometer's] idealizations."[6] What Husserl considers here is what we can know with certainty about the world of the founding geometer. This is not a question about particular historical facts. Rather, it is a matter of what we can know without access to such facts: whatever the actual history was, it must fit this pattern. Husserl says we know there must have been spatiotemporal bodies in the environment of the first geometer, these of various shapes and qualities. Some of these shapes were preferred for certain uses—round shapes make better wheels than square ones. And these bodies could be measured, worked on, and improved for particular practical purposes; Husserl gives the example of surfaces being made smooth.[7] Consider a square-ish piece of wood: it makes a very poor wheel. One can improve it by chopping off the corners to make it octagonal; one can improve it further by rounding out the remaining corners. In fact there is an infinite series of improvements one can make, making the

[6]Derrida (1978), p. 177.
[7]ibid., p. 178.

wheel more and more round. Any actual wheel always contains some imperfections, but those imperfections can always be worked on, making a wheel that is a little bit better.[8]

Such series of possible technical improvements on a shape provide Husserl's answer to his first question, the question of how idealities are constituted: they are produced from these series by means of what he calls a passage to the limit, or infinitization; geometry deals with "limit-shapes".[9] So, ideal shapes are the pole of technical improvements. The notion of circle (or more precisely, cylinder) is produced by extending to infinity the series of possible improvements of the wheel—the perfect wheel would be a cylinder. At the same time, Husserl points out, all sensible aspects are excluded: the notion of cylinder is indifferent to any details about colour, texture, smell, etc. So an ideality is constituted by imagining the abstract endpoint of an infinite series.

2.4.2 From subjective to objective

Now Husserl has the question of how an ideality created in one subjectivity becomes an objective thing, i.e., something available to all people. He answers this question in three stages. First he notes the possibility of repetition. Any constitutive act—such as the one that produces the notion of circle as the pole of possible improvements of roughly circular objects—can be repeated again and again, so I can reawaken within my consciousness any object that I have constituted earlier. The possibility of repetition means for Husserl that idealities are not tied to the particular moment of their conception. The next step is the possibility of speech, which allows us to express to other people an ideality which one of us has created. This means that the ideal object is not tied to a particular individual. Thirdly, comes the possibility of writing, which is Husserl's answer to the question: why is an ideal object not tied to *particular* acts of constitution or speech? His answer is writing, which allows for an ideality to exist independently of any particular person or act.

[8] cf. Husserl (1970), p. 25.
[9] ibid., p. 26.

2.4.3 Tradition and Sedimentation

Ideal objectivities then become what Husserl calls traditions: they are linguistic embodiments of an original constitutive act, and they are carried on through time by a community. As they are carried on, various additions or adjustments are made, so that geometry, for example, is built up from the original founding acts. At any given time, a scientist or a geometer is confronted with the linguistic embodiment of a tradition of valid judgements, from which she can go on to produce new ones.

At each stage, or at each level, in the picture Husserl likes to use, there is another layer of judgements, of constitutions, of idealities laid over-top what is already in place. Husserl calls this "sedimentation". It is a geological metaphor: like a series of deposits of earth and rock laid down over time, there are in a tradition a series of judgements and objectivities laid down over each other. At the foundation of all of these is the pre-scientific, everyday world, which Husserl calls the lifeworld. That is the world in which the technical praxis, the practices we undertake that originally led to the geometric idealization, take place.

2.4.4 Passivity

But if the lifeworld is covered over by layers of sediment, then the tradition has come apart from its meaning; the lifeworld is thus the "forgotten meaning-fundament of natural science".[10] Husserl, in the *Crisis* and the "Origin", is particularly concerned with this danger of forgetfulness (for reasons given below, it can also be described as a danger of passivity). In terms of the sedimentation metaphor, the danger is that sciences can come to work superficially, dealing only with the top level of sediment, and thus losing their meaningful connection with the lifeworld. He refers to the "seduction of language:"[11] because we always encounter a tradition in its linguistic embodiments, we are in danger of mistaking merely superficial associations of those linguistic terms for their original meanings. Thus, we deal with ideal objectivities in terms of linguistic abstractions, which abstract not only from the sensible aspects of idealities, but also from the history of the ideality: its tradition and its origin.

[10]Husserl (1970), p. 48.
[11]Derrida (1978), p. 165.

Husserl notes that as geometry progressed, it grew more general, moving through an arithmetical stage toward the most general logic (first imagined by Leibniz as the *mathesis universalis*[12]). One now "operates with letters and with signs for connections and relations (+, ×, =, etc.), according to *rules of the game* for arranging them... Here the *original* thinking that genuinely gives meaning to this technical process... is excluded."[13] In arithmetic geometry, shapes are reduced to measurable magnitudes (lengths, angles, areas, etc.), and operated on according to formulae. One carries out formal operations, forgetting about their original meanings: "one calculates, remembering only at the end that the numbers signify magnitudes."[14] In dealing with terms representing ideal objects, the possibility is thus open of falling into mere symbol manipulation. Thus, the "arithmetization of geometry leads almost automatically... to the emptying of its meaning."[15] Husserl sees logical validity this way, too. In doing formal logic, the content of the symbols is not important: there are purely formal relations between the various symbols, and operations are defined such that only these formal relations need be taken into account. What we are doing here, Husserl says, is manipulating passively awakened significations; the alternative is to actively constitute these meanings for ourselves.

I need to say more about what Husserl means by passivity here, as it is a central concept. I have mentioned that in Husserl's view, one can always repeat a constituting act. The original geometer, or anyone else for that matter, has the ability to repeat the idealizing act which creates an ideal objectivity such as a circle, or even geometry as a whole. But, because we can pick up concepts linguistically, from other people, there is the possibility of passively taking over such an ideality. The idea seems to be that we can get the concept without its content, without its connection to its founding act. So, we can get a notion of circle which is abstracted from the original technical praxis involved in the infinite series of which "circle" is the ideal pole. That is the sort of passivity that Husserl is concerned with, and is his more technical description of what the sedimentation analogy represents: if we take only from the surface of a sedimented structure of tradition, then we are taking over a linguistic signification passively, rather than

[12]Husserl (1970), p. 45.
[13]ibid., p. 46.
[14]ibid., p. 44.
[15]ibid., p. 44.

actively producing it for ourselves.

Now, Husserl holds that we are intersubjective beings, that our world is an intersubjective one: much of what we believe about the world, understand about the world, know about the world, is taken from interactions with other people. More technically, many of the objects of our thought are built collectively rather than individually: the categories through which I encounter my world are built by me from more basic categories that I learned from others. Because of this intersubjectivity, our experience of the world is potentially shot through with the sort of passivity Husserl fears. There is always the possibility of building up huge parts of our understanding of the world out of passively taken-over significations—thinking in terms we have borrowed, rather than created, one might say.

2.4.5 Reactivation

In the "Origin", and in the *Crisis*, Husserl regards reactivation as the possible solution to this problem. There is always, as I have mentioned, the possibility of active re-production of an ideality. Even as someone who is confronted with the sedimented tradition of some ideal activity, it is possible to penetrate to the primordial sense, and then to actively constitute the whole formation. So, given the notion of circle in contemporary geometry, one can trace it back (as Husserl attempts to do in the Origin) to the founding act which must have created it, and so replenish its contentful connection with the lived, everyday world.

Thus, one can in principle reactivate all stages of a tradition, and so eliminate the passivity in one's ideal objects. But there is a problem here: this complete reactivation is, according to Husserl, an infinite task. Although it is possible in principle, in practice a finite subjectivity—a finite person, one of us—is not going to be able to carry it out. Why he calls it "infinite" is not quite clear to me. It seems to me there would be a finite number of steps. But it is clear enough that the number of steps would be too many for it to be practical. Certainly, to have to recreate all the notions of some branch of science from the ground up every time one uses them would be crippling. Husserl's suggestion here is that if the premises can be grounded in the pre-scientific world, then the meaningfulness of all conclusions will be guaranteed.

This isn't an entirely satisfactory suggestion: we'll see some more reasons shortly, but here

we can note that the question seems to have shifted slightly, from the question of reactivation to the question of guaranteeing meaningfulness—even if the meaning might not be available to *us* as we use the notion.

To sum up: abstraction as an issue comes up again here, arising from Husserl's concerns, i.e., from the question of how ideal objectivities are constituted and maintained. The issue is the risk of what Husserl metaphorically calls sedimentation, or what—apparently more literally—he calls passivity: the possibility of taking up an intersubjective construction in a passive way, of allowing large parts of our world and our practice to be given to us as purely formal significations rather than as our own productions grounded in the lifeworld.

2.5 Critique of the *Crisis*

I shall turn now to a critique of Husserl's discussion. Much of it I shall take to be a fairly decent picture. I am not going to question the notion that we constitute ideal objectivities: I think some story along these lines is needed and is in line with modern cognitive science as well as some forms of pragmatism, and certainly constructivism—so I'm not going to challenge him on those points. I do want to first expand slightly the scope of his concerns with passivity, and then I want to turn to Derrida's discussion of the "Origin", in which its problems start to look much worse.

First of all, Husserl has pointed out that I can take up in a passive way someone else's construction: I can work with an ideality that is not my own. The danger, the Crisis, for Husserl, is that this becomes too widespread, so that our scientific dealings with the world are no longer connected with the lifeworld with which they do in fact deal.

First, I want to expand this from a discussion of science to a discussion of praxis in general. Any sort of operation that involves some kind of ideality, some kind of linguistic or symbolic abstraction—and that may well be all practices—any such praxis is going to involve this danger of passivity, i.e. that I may have taken up passively and superficially the notions, categories, or significations that I am using.

Secondly, though, I want to say that it is not just an intersubjective problem. Husserl is

focused on the fact that intersubjectivity allows for passivity, because I can passively take up someone else's construction. But it seems clear that I can also take up my own constructions passively. That is, once I have constituted an ideality, I can return to that ideality without repeating the constituting act, just as I can return to someone else's ideality without returning to their constituting act.

For example, I can form a notion of some person in abstraction from the actual, concrete person—a model of the person that represents that person to me, and which forms the basis of my behaviour towards the person—and I can then take up that construction passively; the result could be that I fail to consider the actual facts of that person's current behaviour.[16]

In general, it seems that my understanding of the world necessarily involves a great deal of abstraction, and that any of these abstractions can be taken up passively.

2.5.1 Derrida on Husserl

I turn now to Derrida's critique of the "Origin" in his "Introduction" to it. This is a highly complex piece. It draws together many themes from various places, many strands of argument, but its central thrust seems to be this: passivity is simply ineliminable, and therefore Husserl's goal, his response to what he calls the Crisis, his desire to avoid taking over constructions passively, is not approachable, and so is meaningless in the end. Derrida tries to show this by pointing to a number of unlimited series that appear in Husserl's picture of tradition and sedimentation. He points to layers of sedimentation which come prior to Husserl's purported origin of geometry, and he points to levels of reduction that go beyond the historical and eidetic reductions Husserl was carrying out. The existence of these infinite series seems to cast doubt on the possibility of a rigorous return to primordial evidence; this would set phenomenology adrift from the moorings it sought in the lifeworld.

Husserl's picture is of an origin which is distinct, and that can be recovered from a current tradition by means of a series of reductions. Each reduction is the bracketing of some assumption or constituted feature of experience. By "bracketing", I mean that while we cannot entirely escape

[16]Griffin (1995) contrasts the perception that "lies at the core of intimacy" with the possibility that, "[e]ncountering a woman, a man refuses to acknowledge who she is. In place of her presence he substitutes an idea of who she is." (p. 104)

from or get beyond our experience of the world—an experience that must be fully constituted already, as that is what makes for any experience—what we can do is change the way we look at certain parts of it, the mode under which we interpret our experience. Most centrally, we can put out of play our judgements of validity about beliefs and experiences; this is the foundation of the phenomenological method: the bracketing of assumptions about experience, and the study of experience merely as given. Phenomenology, as a series of reductions which return us to primordial evidence, is the answer to the crisis of passivity, because, Husserl believes, it will allow us to recover the original founding acts that constituted the idealities we are now working with; thus we can reactivate them. A reduction is thus a movement towards a tradition's primordial ground. Husserl's picture of history, then, is a bedrock of pre-scientific experience—the lifeworld—on which a founding act has initiated a series of sedimentations.

In Derrida, we get a contrasting picture, in which the event that founded geometry, or any ideality, was an articulation within a history that was already underway. So Derrida speaks of "interior revolutions", rather than founding acts. In his picture there is no bedrock; there are layers of sediment, but no foundation to which to return.

Derrida paints this picture in a forward direction, as well as in a reverse direction. Looking in the forward direction, he notes that throughout the history of geometry, there have been changes in its meaning; exactly what makes something geometrical is a question, he says, that can have no final answer. A revolution within the tradition could always change the answer. In this regard, he mentions Husserl's notion of geometry as deducibility from axioms, and points out that Goedel's theorem—that an axiomatic system cannot be both complete and consistent—requires a revision of that definition.[17] Similarly, and further in the past, he points out that Euclid's closed axiomatic system was enlarged by early modern geometry.[18] And again, the arithmetization of geometry, with which Husserl is so concerned, is a sort of interior revolution which changes geometry's meaning.[19] So, in the forward direction, there is no way to pin down for all time what geometry will be, or to draw boundaries around it that can be guaranteed good for the indefinite future.

In the reverse direction, Derrida points to levels prior to Husserl's origin. Husserl could

[17]Derrida (1978), p. 53.
[18]ibid., p. 127-8.
[19]ibid., p. 126.

not call these levels of sedimentation, but in Derrida's picture, they are no different than any level of sedimentation that comes after the founding act. Husserl himself discusses what he calls "vague morphological types" such as roundness.[20] These are not idealizations in the way that "circle" is, but would have allowed pre-geometrical people to classify objects as round, as square, as triangular, etc. Empirical measurement appears in Husserl to be something that comes after sensible morphology, but still prior to geometry;[21] the measurement of how square something is, how round something is, what exactly are the lengths of these sides—that is prior to proper geometry, but is still in a sense a stage of its history.

Those are levels of sedimentation; Derrida also talks about further reductions. Husserl discusses historical and eidetic reductions, which he thinks will give him certain knowledge of the necessary founding acts in history for some ideality like geometry. Derrida points out that there are other necessary reductions in order to have a really radical phenomenology: in particular, constituted eidetics such as formal logic and ontology would have to be reduced, as would phenomenological language itself:[22] the language in which phenomenology is carried out itself contains many abstractions, not to mention metaphors, and the meanings of those would have to be reduced and then reconstituted in order to avoid any remaining passivity.

So, it seems that at every stratum, a deeper one can be identified. Derrida thus wonders in the end "if it is still legitimate to speak of *an* origin of geometry."[23] The picture that he has left us with is one in which passivity can sneak in in many different ways, and in which not only would there be an infinite series of steps to eliminate passivity, but we would also have to work in all directions at once in order to accomplish it. It might be helpful to picture it this way: our idealities (and other, non-exact abstractions) form a complex network; each idea is related to some other ideas, and also, perhaps, to the lifeworld and other people, directly or indirectly. Any part of that network can be infected with passivity—but because all parts of it are interrelated, there is nothing outside the network, in Derrida's picture, that we could rely on as the foundation from which all else can be derived, and constituted actively.

[20]ibid., p. 125.
[21]ibid., p. 126.
[22]ibid., p. 68.
[23]ibid., p. 131.

I believe we must accept that there is no foundation, or at least, that there is no way we could reach it: we will never succeed in reducing everything, and so we will never succeed in eliminating all passivity. Husserl's quest for activity appears quixotic, an attempt to encompass all that there is in one's own thought. To some degree, we must always abstract from our ideas' histories—but surely there is something to Husserl's worry about entirely passive understandings. It remains to be seen how this tension can be resolved.

2.6 Abstraction, good and bad

I have been alluding to the necessity of abstraction repeatedly, always with the sense that it is a necessary evil, but we should recognize that abstraction is sometimes an outright good thing: it is useful, a tool that gets us something we could not get if we remained in the concrete.

This is most obvious if we consider that to deal effectively with various *kinds* of situations and things, we need to abstract. If we always considered all of the details of the current situation, we could never apply any past experience to the present. Applying past experience to a present situation requires that we classify some of the current features of our experience as *being of the same kind* as some features of our past experience. We need this level of abstraction in order to, simply put, learn: learning is based in abstraction. It is this human ability to form habits of thought and behaviour—this ability to learn—that saves us from having to solve every problem from scratch every time we encounter it. That would be just as debilitating as trying to reconstitute every ideal objectivity from the ground up every time we use it.

Of course, habits of thought can impede awareness—our term for this is prejudice. If I classify some feature of the present situation, based on past experience, as being of the same kind as a previous one, and reach conclusions from this that do not in fact hold in the present situation, I have been prejudiced. But prejudice—at least the risk of it—is simply learning: learning requires that we ignore some details of the current situation and instead apply past experience to it. So we can view learning as both a sort of prejudice and a sort of abstraction.

Another sort of abstraction, this one outright good, is suggested by Marcuse's discussion, in

the book of the same name, of what he calls "the aesthetic dimension."[24] For Marcuse, what makes a piece of art valuable is not "realism" in the Soviet sense—it is not that it reflects the genuine conditions of the present—rather, it is precisely that it abstracts from present reality. The aesthetic dimension for Marcuse is the dimension of possibility, the dimension of the not-real, the not-actual, the not-current; and as such, it is the source of all possible revolution, innovation, all desire and hope for change. So, for Marcuse, the aesthetic dimension is a sort of revolutionary abstraction from the present. Certainly, I think we should agree that the kind of abstraction that allows us to conceive of possibilities that are not actual is of great importance.

So what we have are some concerns about abstraction: on the one hand learning seems to be necessary and good—on the other hand, it seems to be a sort of prejudice; on the one hand we need to abstract from the current situation—on the other hand we can be criticized for ignoring relevant details of the current situation; on the one hand we need to deal with idealities abstracted from their concrete origins—on the other hand, we don't want to slip into using them entirely in abstraction from those origins. So what we need to ask is what makes an abstraction good or bad? When is abstraction desirable and when not?

So let us go back to Husserl with this in mind. What we want to do is make a distinction between good and bad abstraction. Recall that Husserl's concern was that we can passively take over intersubjective idealities; I have added that we can also passively take over our own constituted objects of thought—that in general, we can deal with the world in terms of categories, idealizations, etc. that are abstracted from their origins. At the same time, it has come to appear that there is no way to entirely avoid this, that a certain degree of passivity will always be involved. I find this to be a particularly obscure issue, at least when considered in a general (and therefore abstract) way. Nonetheless, to help us grope towards a solution, I am going to consider in turn three approaches to this problem—how we might distinguish good from bad abstraction, given the dangers of passivity that Husserl has pointed out.

[24]Marcuse (1978).

2.6.1 Committed Reactivation

The first idea I want to discuss is a sort of commitment to examining one's ideas. For Husserl, the answer to the problem of abstraction (sedimentation) was reactivation: one puts out of play one's constituted significations, then reconstructs them from their original ground. Derrida has made glaring two difficulties with such a project: first, the ground is inaccessible (whether metaphysically or just practically matters little); second, one cannot reduce *everything* at once. Reactivation, then, is always incomplete and relative; so we may wonder whether it is a pointless goal.

I think it is not. Though we must grant that passivity will always infect our networks of thought and experience, there are surely matters of degree. First, of course, there are degrees of passivity. Take a moral rule, for example, that one has learned from one's parents and holds without questioning; contrast this with a rule that one has considered carefully to understand its origin and its significance. While both rules are based to some degree on relative, passive constructions, the difference is clearly significant. Even if we take the metaphysical position that our conceptual system is closed—that the only criterion for truth is coherence—the difference remains: the unexamined rule is known in isolation, while the critical rule is known along with its relations to its context. In this sense, we can surely say that it is held less passively.

Second, passivity may come in degrees of salience; this will depend on our values and projects. In principle, any passive construction, any abstraction, could get us into trouble. But in practice, as I suggested above, we only have problems when the omitted details turn out to be important.

We can also grant that reduction is always incomplete: in order to function as phenomenologists, we must take some things for granted. But this does not seem to be a problem: the bracketing of *everything* is not relevant to the reconstitution of a single ideality or set of notions. At a minimum, so far as I can see, we need to place in brackets whatever notions we are reconstituting. Nothing (except the shortness of time) prevents us from doing this iteratively with our entire network of thought and experience. At each step, of course, we only manage to link one part of our network more explicitly with a few others—and these others may be shot through with passivity, with unreflective acceptance. Thus, the reconstituted idea at each step will inherit a lit-

tle passivity from its surroundings; one could never chase all the passivity from the network like this. Nonetheless, our ideas will be in slightly better shape than before. If one were to keep going over salient areas of one's network in this way, perhaps the whole procedure might converge to a stable solution.[25] As Husserl put it, "every serious and genuine move from a 'ready-made entity' back to its intentional origins gives us, in respect to those strata already uncovered and the clarification of what is accomplished in them, an understanding which, though merely relative, is yet an actual understanding as far as it goes."[26]

The key to this sort of piecemeal, committed phenomenology is precisely that not everything is bracketed at once. If there is no ground beyond all sedimentation, then a complete *epoché* would leave us with nothing: anything would be possible. This is the threat that Derrida's critique seems to unveil. But in fact we need not (and probably cannot) put out of play all of our constitutions—experience, ideas, values, projects—not all at once. We need only put some of them out of play, while continuing to rely on the others. The horizon of possible results may be absolutely open, but we can move from one place to another at a walking pace, always facing constraints that remain in play.

A commitment to reactivation is a solution in degrees: it does not so much distinguish good from bad as try to eliminate as much passivity as possible, with some sort of priority given to certain areas of our conceptual network. But how do we know what is most salient? What guidance can we give as to where to begin? And where, since there are other things we must do with our time, to rest? Let us keep these questions in the air for the moment.

2.6.2 Awareness

A second way of approaching our problem of distinguishing good and bad abstraction is to consider the notion of awareness. It seems that abstraction and awareness are contraries: if I abstract from current experience, if I operate on and in the world in terms of abstract categories, then I am not being aware of certain details of actual experience, of the actual world. In contrast,

[25] Cognitive scientists will perhaps recognize the form of the iterative process described here; it bears a great similarity to connectionist networks in which the relations between nodes are iteratively adjusted and the network converges toward some stable state—though this convergence is most likely in the absence of continued input.

[26] Husserl (1970), p. 168.

if I could achieve a state of complete awareness, then that state would involve no abstraction, it would seem. So abstraction in this sense is a sort of unconsciousness, and we might deal with the dangers of abstraction by attempting to maximize our awareness; what we would be aiming for would be an openness to the facts of the present situation; we would not simply apply ready constructions and assume that the details do not matter. Let us say I am running an errand, just going out to buy a snack, walking a path I know well, with a clear idea of each act necessary to achieve my modest goal—all this in advance. Now I may perhaps walk past an unusual plant, assuming the path has nothing new to offer; or I may fail to recognize that someone needs a hand with their too many groceries, because it is not part of my agenda. On the other hand, if I can maintain my awareness of the present details, I can use these opportunities as I choose.

I think that phenomenology itself is closely related to this idea. Maurice Natanson refers to the *strangeness* that is experienced when one carries out the phenomenological *epoché*, when one brackets the judgements of validity of one's experience, as Husserl recommends. Natanson describes it as an "implosion of experience: the world becomes strange, familiarity is eclipsed."[27] Charles Harvey, with reference to Natanson's discussion, says, "this strangeness is nothing more (nor less) than the act of *seeing through* the sedimented meanings that one inherits and develops, that structure one's world."[28] In taking a phenomenological stance, the world suddenly seems strange because we are no longer experiencing through sedimented categories, but are experiencing it in some more direct way. Putting out of play some of our assumptions allows us a greater degree of awareness.

We might describe this as an experience of the situation without the abstract relations between our categories in play. It may well be that the categories themselves are still in play to some degree—we may still see a dog as a dog—but what we have bracketed out are the relations between the notion of dog, and the notion of, say, dog bylaws, pets, animal rights, human-animal relationships, the distinction between humans and nature. Even more radical would be a state in which our categories themselves are put out of play, in which we would see what we would otherwise call a dog without going so far as to categorize it as such. This would be some sort of altered state of consciousness, certainly not easily achievable; one has to look at the world in a

[27]Natanson (1973), p. 134.
[28]Harvey (1989), p. 233.

rather strange way in order to achieve this.

One altered state of consciousness that seems relevant here is the sort of meditation in which one takes a stance of pure observation, rather than judgement. This observer stance, typical to the sort of meditation I have in mind, seems very akin to the bracketing of judgements that is central to phenomenological method. One might even wonder whether a phenomenologist at work does not arrive at a state of consciousness rather like that which one achieves through meditation. What they seem to have in common is that the sedimented meanings of the world slip out of the picture. One leaves aside inherited meanings and is perhaps better able to attend to the concrete. So meditation can be a way of enhancing awareness.

But we should note something paradoxical here. As I meditate, I withdraw; the world becomes something outside me—my body, my voice, even my thoughts and feelings included. From this is derived a great calmness which lasts afterward: the freedom from want exalted by Buddhist and Stoic—or, more accurately, the freedom to want as one chooses, the existential freedom to choose one's projects, to leave behind those concerns and meanings at which one has incidentally come to grasp. Indeed, one might reach the mistaken conclusion from this experience that to be always in retreat is to be always happy—that separation, abstraction, is itself the most authentic kind of experience, that it is the best thing; rather as Husserl seems to hold up complete and self-sufficient activity as the ideal, one might think that retreating from the uncontrollable outside world is best. But this is not right: a meaningful life, I take it, lies in the pursuit of projects, and thus binds us to the world through them, at least if we so choose. It is not clear to me where meanings could come from if not this engagement with the world, human and non-human. The sort of extreme awareness we can achieve through meditation is itself a sort of abstraction.

Nonetheless, meditation does seem to be a kind of positive separation, a sort of creative retreat. It allows for greater inner exploration, perhaps a greater awareness of one's self and ones surroundings, both during the meditation and afterwards. Both phenomenology and meditation try to reconnect with the details of the world, with the contexts of our concepts, by means of a sort of separation. The point, very broadly, is to get away from our distracting abstractions and have a look at what is really there. But, by the same token, what is really there has meaning only in

the context of our constitutions, idealities, and abstractions. So in seeking awareness, we cannot in general seek a pure observer stance; instead, we have to continue to use our abstractions while trying to be aware of what they might leave out.

Above, we considered the notion of committed reactivation: one ought to actively reconstitute one's network of experience and thought, at least to the extent that it is practical and salient to do so. But when is it salient? A partial, but still unsatisfying answer, is that if one maintains an awareness of the present details, rather than working strictly from prejudice, one ought to be able to see where one's abstractions are failing. But, again, complete awareness seems unattainable, so we have to wonder how our attention should be guided.

Aside: Awareness and Respect

I have been presenting my concerns with abstraction largely in terms of the dangers it might present, i.e. as an issue of prudence. But one can also consider it as a moral issue. I want to turn aside for a moment to suggest that this emphasis on awareness might provide a useful notion of respect.

There is what I would call a "thin" notion of respect that comes down to us from Kant. This is the notion that to respect someone is to regard that person as an agent, as a morally free person, and thus to treat her as an end in herself—not to manipulate her in order to achieve one's own ends. Stephen Darwall describes this kind of "recognition respect" for a thing as "a disposition to weigh appropriately in one's deliberations some feature of the thing in question and to act accordingly;" where persons are concerned, to be respected in this way is "to have other persons take seriously and weigh appropriately the fact that they are persons in deliberating about what to do."[29] Respect, here, is a fairly formal requirement on the way one interacts with other persons.

I think we can develop a thicker notion of respect from the idea of awareness. Respect, on this account, would be awareness of and consideration of the details of another's being. Why should one not "weigh appropriately in one's deliberations" *all* features of a person? Seyla Benhabib calls this "the standpoint of the concrete other", which "requires us to view each and every rational being as an individual with a concrete history, identity and affective-emotional constitution;" this

[29]Darwall (1977), p. 38.

contrasts with the generalized other that is the focus of Kantian moral theory.[30] Such concern with the concrete other is the opposite, I would suggest, of prejudice and of mastery. Mastery is a matter of abstracting from the details of one's collaboration with another, and this abstraction implies abstracting from various details about the other himself. The alternative would be a sort of awareness. The thin, Kantian notion emphasizes awareness of of the other as rational agent, and only that. A thicker notion of respect would include all aspects of a person's being, so to treat a person as an abstract model of what the person actually is would be the fundamental disrespectful act.

This is possibly a notion of respect that could be used in ecological arguments, extended to non-human others as well. If the object of moral respect is no longer restricted to rational agency alone, then perhaps we can sensibly speak of respect even where there is no rational agency: appropriate consideration of the details of the non-human world is also a kind of respect. As many ecofeminists and other ecologically-minded ethicists wish to do, it would give us a way of pointing out what is morally wrong with certain approaches to the world: they deal with the world in abstraction instead of with awareness, and that, we might say, is appropriately described as a kind of disrespect.

But here, we need to acknowledge once again that prejudice is not avoidable, that learning itself is a sort of prejudice—a sort of applying to the present of abstractions based on past experience. We cannot demand complete and slavish attention to the details and only the details of the current situation. But I think what we can say based on this discussion is that there is an appropriate level of awareness of details in a any given situation, and that we perhaps fall short of this level of awareness often in our daily doings—and this leads us both to mistreatment of others and to mistakes that impact on ourselves.

2.6.3 Live Beliefs

The third way I want to approach our question—how do we distinguish between good and bad abstraction, good and bad separation—is in terms of what I shall call "live abstraction". So far, we have been dealing in matters of degree and effort: commit to reactivation; maximize awareness.

[30]Benhabib (1992), p. 159.

The main difficulty with these approaches is that we are left with the question of when and what requires our awareness or our re-constituting effort—as we have repeatedly noticed, these things are possible only to some degree. This appears tricky: if I am unaware of something, how could I realize its importance? If I have taken over an ideality passively and superficially, how can I know how salient the layers of sediment are that lie below it? Here, I want to try to draw a distinction between beliefs or abstractions that are "alive" and those that are "dead". This is no longer a matter of degree, but rather an evaluative distinction: live abstractions are good, dead ones bad. We will not, however, be entirely leaving behind the solutions-by-degree discussed above: it is characteristic of a live abstraction, I shall claim, that it tends to trigger our awareness and our capacity for reactivation when they are needed.

The terms "live" and "dead" I borrow from a similar context in J.S. Mill's *On Liberty*. Mill argues for the importance of free speech in the second chapter; true to his declared utilitarianism, he regards it not as a right *sui generis*, but as essential because of the good effects of dissent. Half his argument is that a suppressed opinion might be true or partly true. The other half is that an unchallenged belief may be held as a prejudice, and so be ineffective. This argument is interesting for its similarity to Husserl's *Crisis*. Mill notes that in the history of beliefs, "they are all full of meaning and vitality to those who originate them, and to the direct disciples of the originators," but once a belief is well established, "those who hold it have generally inherited, not adopted it...But when it has come to be an hereditary creed, and to be received passively, not actively—when the mind is no longer compelled, in the same degree as at first, to exercise its vital powers on the questions which its belief presents to it, there is a progressive tendency to forget all of the belief except the formularies, or to give it a dull and torpid assent, as if accepting it on trust dispensed with the necessity of realizing it in consciousness, or testing it by personal experience; until it almost ceases to connect itself at all with the inner life of the human being."[31] Just as in Husserl, we have the contrast between active and passive, and between merely formal ideas and ones that are connected with their meaningful grounds; just as in Husserl, the transition from activity to passivity is held to occur over the history of a tradition. Where Husserl uses the metaphor of sedimentation, Mill speaks of a belief being reduced until it is "the shell and husk

[31] Mill (1869), ch. 2, paragraph 27

only of the meaning."[32] Such a belief Mill calls "a dead dogma, not a living truth."[33] This is the contrast between "dead" and "live" I wish to explicate.

Mill's discussion differs in two significant respects from Husserl's. First, he is concerned with "beliefs" rather than "idealities". But when he worries that a belief is dead and meaningless, he must implicitly have in mind something like the conceptual impoverishment that Husserl identifies as the Crisis. Second, Mill's central concern is that a dead belief will not be sufficient to move us to action. Husserl's concern, and ours, is not so much that one might fail to act as that one might fail to act *appropriately:* an abstract belief or ideality may lead us into error. Nonetheless, the parallels are striking, and I think we can justifiably use Mill's language here.

Provisionally, then, let us say that dead beliefs, idealities, and abstractions, are ones that are not connected to their derivations; live abstractions somehow retain this connection.

Gabriel Marcel on Abstraction

I want to draw a number of points from Gabriel Marcel, partly to point out connections between his thought and our discussion, and partly because some of his ideas may help us flesh out this idea of a live belief (for a more extended discussion of Marcel's philosophy, see chapter 3).

Marcel makes a point about learning and habit similar to mine above. He views habits as acquisitions, things that we merely *have*.[34] He contrasts this with genuine insight: when we deal with a habit of thought, we are dealing with the expression of an illumination rather than with the illumination itself. This seems to be parallel to Husserl's notion of taking over an ideality passively rather than constituting it actively for oneself, rather than understanding its founding act.

Marcel contrasts truth with what he calls a simulacrum of truth.[35] Once again, this seems to be the same idea as Husserl's: the ideality, the signification, by which we represent some constituted aspect of our praxis is in danger of becoming independent from that meaning-bestowing,

[32]ibid., paragraph 26.
[33]ibid., paragraph 21.
[34]Marcel (1950), p. 53.
[35]ibid., p. 58

constituting act. Marcel discusses what he calls the "life-lie". One is living the "life-lie" when one's "attention is purposely directed away from the data of one's own existence."[36] Marcel says that this is necessary for some of us in order to bear life; he calls it "a protective covering within which our life goes on".[37] He seems to be suggesting, though, that this is blameworthy, or a least not a good thing—hence the life-*lie*. Truth, on the other hand, would be an awareness of the data of one's existence.

The notion of passivity also appears in Marcel. He adds that experience is not passive. Here, it would seem that he is agreeing with Husserl's picture of experience as something we must constitute. But Marcel adds that "the more richly it is experience, the more, also, it is reflection."[38] This is interesting in terms of the dichotomies between action and passion, and awareness and abstraction, that we are facing: he is suggesting that far from abstraction being opposed to experience, it is in fact necessary to full experience. Consider the meditative or phenomenological experience: the strangeness of the world is in part a reflection of the fact that we are *not* experiencing our world when we are in such a state: we are experiencing a thinner, altered, abstract version of that world—a world abstracted from the meanings it has for us. So, a concrete encounter with the world is in some way a combination of our abstract idealities and the actual data of experience, as Marcel would call them.

But Marcel does seem to share Husserl's concern with the passive taking over of ready-made constructions. He refers approvingly to Henri Bergson, citing his idea that "true intelligence is the enemy of the ready-made."[39] So Marcel also seems think that to simply take over something, without constructing for oneself, works against experience, intelligence, and indeed philosophy.

Marcel claims that "the dynamic element in [his] philosophy" is the "battle against the spirit of abstraction."[40] Later, he describes abstraction as a mental operation necessary to achieving any determinate purpose.[41] It is necessary to abstract: Marcel recognizes this aspect of abstraction; but, Marcel says, we must retain an awareness of the necessary omissions. This may provide part

[36]ibid., p. 64
[37]ibid.
[38]ibid., p. 83.
[39]ibid., p. 146.
[40]Marcel (1971), p. 1.
[41]ibid., p. 155.

of our answer as to what makes a live belief, and what makes a good abstraction rather than a bad one: that the omission, the acts of abstraction, which created the abstraction, are somehow retained in the abstraction itself. The abstract notion is not taken as being complete in itself, but in *some* way retains a connection to its origins, to its derivation.

Marcel also talks about what he calls ideology. To have an ideology is to be enslaved to a "mortified" part of the self. He contrasts this state with that of the thinker or artist, which is to be "continually on guard against this alienation, this possible fossilizing of his thought."[42] He describes the thinking, artistic state as a "continual state of creativity... and the whole of his thought is always being called in question."[43] Now, Derrida's critique of Husserl, and for that matter, the simple fact of our finitude and the necessity of actually getting something done, suggest that Marcel has gone too far in suggesting that the whole of one's thought might be constantly called into question. But again, we have this idea that a thought can be either dead or alive, can be fossilized or mortified, and if it is, that this is a sort of alienation—and that the antidote is a sort of connection to the rest of one's thought and experience.

For Marcel, this ties to his notion of what it is to do philosophy, in contrast with science. He says that "between a philosophical investigation and its final outcome, there exists a link which cannot be broken without the summing up itself immediately losing all reality."[44] In contrast, the scientist's "mental gropings," like inefficient routes, "are destined to be dropped and forgotten... once the traveller knows the lie of the land."[45] So what characterizes philosophy for Marcel, in contrast with science, is that the path to a conclusion—the derivation, the constituting act—is somehow retained in the conclusion itself: there is a link that must be maintained there.

Live Beliefs as Reflexive

So, Marcel, Mill, and Husserl all seem to share the idea that a conclusion is not properly separable from its derivation—that a live idea somehow hooks into the line of thought that created it. Now, we have already seen what this cannot mean: in practical terms, a live idea cannot always

[42]Marcel (1965), p. 166.
[43]ibid.
[44]Marcel (1950), p. 5.
[45]ibid., p. 6.

be considered along with the entire network of ideas with which it is connected in our experience and our thought. What I want to suggest it could mean though, is that our conclusions, our idealities, ought to contain within them some degree of self-evaluation. So, our conclusion is not just that X is the case, but that X is the case *and* this was derived in some way that might require revision. This is a reflexive feature: the live abstraction points toward its own limited status.

We can picture this in terms of the network analogy. All of our idealities, our thoughts, our experiences, form a densely interconnected network. Within that network, we might call those ideas "dead" which *appear* as bounded within themselves. Though they are connected to other ideas in the network—their meaning depends in various ways on various other concepts and experiences, including those from which they were constituted—though those dependencies are there, they form no part of the idea itself, as we experience it and operate with it. In contrast, the "live" ideas are those that are in some way entangled with their context—are in some way hooked into the ideas around them, are hooked into their own derivation from other ideas, have feelers out to those other ideas. In operating with a live belief, then, we would be always open to getting drawn into considerations of other beliefs which are historically or at the moment related to it. A dead belief is one that we can operate with as though it were not connected to others, or as though those connections operated in certain purely formal ways, like the connections between the symbols of formal logic. A live belief would be one for which such operations are constantly in danger of being waylaid and leading us into larger questions, or forcing us into taking account of the details of the current situation. This is a sort of awareness, and a sort of openness to re-evaluation of belief; and yet it demands neither constant awareness of everything, nor that the infinite task of complete reactivation and reevaluation be completed. Instead, it requires only that we are not shut off from these possibilities, and that our ideas to some degree tend toward these sorts of operations and experiences.

It also does not require that we work alone. As Husserl pointed out, our ideas are intersubjective: my conceptual network is not something contained within my mind, but reaches beyond me to the social world. The physical world, too, is tied in; reactivating our understandings and keeping our abstractions alive are projects involving communities of people, as well as the technologies they work with. We will see as much in the coming chapters.

So a live belief, a live abstraction, is self-evaluating and connected. A dead one is a fossil, is mortified, is experienced and operated on as complete in itself. It is the tendency to connection that gives an abstraction life.

It may be worth a glance back to see what we have kept and what discarded from Husserl's *Crisis*. We have kept the notion that passivity matters, and that we can increase the meaningfulness of our ideas by working at reconstitution. But we have discarded the sharp dichotomy between activity and passivity; we can be more or less active, but there is no absolute activity to seek. I need not, and could not, dig through all the sediment to encompass the whole world, god-like, in my thought; instead, I need work only locally, to some degree, and where it matters most. To achieve this, it is a tendency to connection that matters, not a complete re-linking of what may be an infinite chain.

In this chapter, then, we have looked at some of the general ways in which abstraction could be dangerous: abstract symbols can stand between us and the world; an abstract encounter with the environment can lead us to a stance of mastery or domination which is dangerous, and perhaps also disrespectful; and operating with idealities that are abstracted from their origins, that deal merely passively with the upper layer of a sedimented tradition, is to act in ignorance of the meanings of those idealities for the lifeworld, for lived experience, for everyday life. At the same time, abstraction is unavoidable and sometimes useful and good. So, we have set ourselves the problem of how to distinguish a good abstraction from a bad one. My suggestion is that a good abstraction is a live one, and the dead ones are to be avoided. We distinguish between them in terms of their isolatedness. To be sure, good abstraction need not produce a sort of Leibnizian monad, which mirrors the entire universe of experience and thought; but what it requires is some degree of connection to its context of experience, thought, and derivation, such that it is open to entanglement with these other questions, such that it inherently tends to prompt awareness and reevaluation.

In putting it this way, I am describing a state of mind that is difficult to identify with any precision, and I admit to some apprehension on this point. It can be difficult for us to improve our practice by reaching after vague notions of the right state of mind. But we can talk about the operations that we perform, mentally and physically, in using the abstractions we use, and we can

a be a little bit more clear in this way about what a good, live abstraction is. The important thing is that we operate differently. Live abstractions must be such that in order to operate with them, one is forced at least periodically to check out their connections with derivational, experiential, and ideal contexts.

The following section is a preliminary attempt to say what this distinction might amount to in the practice of philosophy; the following chapters try to show how dead abstraction is an issue in technological practice. Here, I shall give one example—one that is both simpler and perhaps close to the hearts of my academic readers. Consider marking schemes. These are formulas or algorithms that prescribe how marks are to be assigned to student work. Some are very general (so many marks for style, so many for content); some are highly detailed (one mark for the right word here; half off for the right word in the wrong place, etc.). Once a marking scheme is developed to a certain degree of detail, the possibility opens for it to function as a dead abstraction. Anyone who has done enough marking has run across cases where the marking scheme fits poorly: students have a gift for producing the unforeseeable. Now, one can operate in two ways: one can apply the marking scheme more or less mechanically, or one can keep in mind the reasons the marks are being assigned, and so apply it as a living thing that can adapt to odd circumstances. All the details of the derivation may not be relevant at any given time; in fact, most of the reasons for this or that marking scheme feature can be forgotten most of the time. But an attentive marker can keep alive the sense that the marking scheme is not an end in itself, but exists for pedagogical reasons; this is enough to trigger reflection when these reasons are being flouted. The problem is worse when one gives a ready-made scheme to a subordinate marker, who may be unaware of its meaningful origins, and so must operate with it as a dead abstraction. In large courses with multiple markers, fairness often trumps flexibility, and a few marks are lost or won for reasons quite divorced from the original intent of the marking scheme.

2.7 Concrete Philosophy

In conclusion, I want to talk about something that I shall call "concrete philosophy". Now, for philosophy to be entirely concrete would be for it to be simply living, but then it would make

no sense to call it philosophy—just call it living—so I do not mean that. What I do mean is philosophy that aims at live conclusions. This is philosophy that is Marcellian in spirit, in that the enquiry is not discarded once the conclusion is reached, but is in some way retained in the conclusion and considered as part of it. Live philosophy would have a healthy scepticism of universal claims. Such claims we should confront with the question, "In what context?" Universal-sounding claims are allowable insofar as they contain (or are understood to contain) some sort of reference to the range of their application, that is to the conditions of their derivation, their origin, their connections to the praxis of the lifeworld.

A philosophy of this sort will always be frayed around the edges; there will always be dangling references to what it does not contain. A philosophy that appears complete and self-contained is necessarily a dead abstraction. A concrete philosophy, on the other hand, is live in the same sense that an individual abstraction is live; that is, it contains the seeds of its own reevaluation. It encourages us toward awareness, rather than the mere formal application of abstract categories.

A philosophy of this sort might play a certain political role. By calling attention to the limitations of abstraction and universals, to the necessary awareness of detail, and to the connection of our ideas to the particular way they are derived, to their particular origins in lived practice, we take a political position that allows for an emphasis on difference, on individuality, on the exceptions to generalizations. It is a philosophy that opposes itself to ideology in the Marcellian sense of fossilized abstraction. So it opposes itself to violence and oppression in the name of abstract principle where these—as, I take it, do most if not all violence and oppression—exclude an awareness of the particulars of their victims, where they are in the thick sense that I have described above, as well as the thinner Kantian sense, disrespectful.

Now, this sort of politics is also the sort that might be served by deconstruction as an approach to philosophy. Deconstruction also aims to allow for differences, to turn attention to the margins, to open up awareness to what is concealed in or excluded from certain kinds of discourse. So we should compare concrete philosophy to deconstruction. Deconstruction is a method that involves identifying oppositions or dichotomies within a discourse, and using the details of the discourse to turn that opposition on its head. An opposition that has been so deconstructed loses its political

power, loses its hold over us. Deconstruction is a way of getting out of the enclosed realm of some discourse, of pushing past its boundaries. It seems to me that any discourse, any way of approaching the world, any network of idealities and experiences is open to deconstruction in this sense: its boundary may be pushed. The sort of consistent reevaluation that I discussed above is related to this sort of deconstruction.

Admittedly, some adherents of deconstruction appear to have made the mistake of going to far: they conclude that because one *can* always deconstruct a particular discourse, one *ought* to deconstruct every discourse—that deconstruction is the only valid methodology—or worse, that no real discourse is possible, because all discourse will fall apart under the pressure of deconstruction. But I take it that this is not the original intent of deconstruction and similar approaches to philosophy. Rather, the political aims of deconstruction are much like those that I gave for concrete philosophy. Deconstruction should be seen not as a sceptical metaphysics, but as a political tool.

If concrete philosophy and deconstruction are both political tools with similar goals, the key difference between them is perhaps the simplicity of concrete philosophy. Deconstruction is a complex method, one that often works by obfuscation, by subtle shifts in meaning, by clever and surprising twists of the discourse. Concrete philosophy, on the other hand, might appear almost naive in comparison: it simply claims to state what is the case, without claiming to have stated all that is the case, without ever claiming to have completely covered any question. I think there is a great advantage to this simplicity. One aspect of this advantage has to do with the deconstructive mistake that some have made—of rejecting all oppositions, of leaving no way to talk about the very differences we want to defend, of leaving no way to discuss good and bad, right and wrong. Though such an error is not, I think, inherent to deconstruction itself, it is easy to make with a method so complex and so bent on undermining discourse rather than supporting any conclusions. Concrete philosophy, on the other hand, tries to achieve similar political ends in a more straightforward manner.

Now, this simplicity, of course, might amount to naivete when the discourse is politically charged and well-established. In such cases, deconstruction or something like it may be the only way to get out of the linguistic trap that has been set. Particularly when some of the discussants

are not engaged in good faith, it seems to me that deconstruction is a sort of weapon—a way to force one's way out of linguistic cages. Concrete philosophy aims not to make those cages in the first place. It does, to an extent, presume the good faith of those involved in the discussion. But by remaining sensitive to the possibility of dead abstractions and conclusions, it seems to me that concrete philosophy can, when used in good faith in a discussion carried on in good faith, accomplish many of the political ends of deconstruction without the difficulty. And because it is more straightforward, it may allow for more progress—roughly put, for better use of resources.

One might then see this as an argument as to whether one ought to be a concrete philosopher or a deconstructionist: one would have to choose one political approach or the other. But this is not the case: these two methodologies are supplements to one another; they are not the only possible approaches to these sorts of political concerns either. What we ought to do is consider them as tools or weapons to pull out depending on what purpose we wish to achieve or what battle we are forced to fight.

I shall leave off my discussion of abstraction by suggesting the possibility that will concern us in the coming chapters. We have been considering live and dead abstraction largely in the realm of ideas, of discourse and philosophy; I suggest that analogous issues arise in the practical, technological realm: certain technologies embody dead abstractions. These technologies mediate our relation with the world such that when using them, we can operate only in terms of dead abstractions, i.e., ones that are cut off from their context. It is to the notion of mediation that we shall turn in the next chapter.

Chapter 3

Mediation

It may be uncontroversial to claim that technologies mediate our various relations, so long as we have a certain picture of media in mind—a sort of empty channel faithfully relaying contents from one end to the other. But when I speak of the "media thesis", I mean the claim that technologies are not at all this kind of neutral medium; on the contrary, they inescapably modify the way we relate to things, and this is why they require our attention. When I speak of mediation, then, I mean to imply that technologies are not mere neutral tools, but significantly affect our relations—to each other, to the physical world, and to the technologies themselves. This seems to be the position held, in one way or another, by most (but not all) philosophers and sociologists of technology today. Albert Borgmann's "device paradigm" (see section 5.2.1), for example, seems to have this implication; but, even a critic of Borgmann's romanticism like Peter-Paul Verbeek agrees at least this far: "technological artifacts always are a medium between humans and reality," he writes. Artifacts "help shape *how* they [the artifacts] are used," and so help constitute this relation.[1] He later adds that Borgmann's desideratum, engagement, is no "state of mind", but rather a "modus" of the contact between humans and reality (I take it that he is saying it is a way of *operating*, not an attitude: see below for this distinction).

Andrew Feenberg likewise emphasizes that technology can constrain our relations; his interest is primarily in political relations. For example, he notes that modern technologies of produc-

[1] Verbeek (2002). The phrase "medium between humans and reality" is unfortunate: of course the humans and the artifact are parts of reality too.

tion happen to be designed so as to make a certain sort of management-labour division effective; the result is that it appears inevitable.[2] Feenberg is here relying on Bruno Latour's notion of delegation: a norm may be "delegated" to a machine, which then enforces it. Latour's simple example is an automatic door-closer, which takes over from people the obligation to close a door.[3] The norm in question is that the door remain closed. Initially, it is the responsibility of humans passing through the door to close it behind themselves; when the door-closer is installed, this responsibility is delegated to the technology. Latour also emphasizes the interrelatedness of human and non-human doing, a notion on which we will focus in the next chapter: for him, the development of the door and of the people who use it are bound together like words by grammar: "The door is like a word in a sentence, bound to other words."[4] The implication is that one cannot freely change one component of this system without changing others too. The general consensus, then, seems to be that technologies leave some choices open, but not all, and so our relation to our world depends in quite straightforward ways on the technologies we use. It is this notion that we will develop in considerable detail below. To do this, it will be useful to take a couple of steps back, and to consider, in general, how people do things.

3.1 Toward a Theory of Human Doing

When theorists consider what humans do, we often focus on categories like action, agency, deliberation, and will; or, on the other hand, structure. The first group of terms often imply that human actors, or something in them (their wills) are metaphysical origins of action: we deliberate, choose a course of action, then act—this is the picture. Structuralism, post-structuralism, social contructionism, psychoanalysis, and other schools have challenged this way of looking at things—and my discussion here owes a general something to these traditions. But this challenge has perhaps been too successful: we should admit that these notions—of will, agency, etc.—can be quite useful in some contexts, even if they are problematic in others. I want to suggest, though, that we try a shift of focus, and see what results. Instead of a theory of action focusing on will and

[2]Feenberg (1999), p. 87.
[3]ibid., p. 85.
[4]Latour (1995), p. 280.

deliberation, let us take some steps toward a theory of human doing with a focus on techniques and technologies.

It will only be a few steps, and this is not meant to be a complete picture. This is particularly true in the present chapter, where individual people are the focus. It has been argued by various schools (aristotelianism, feminism, communitarianism) that our being and our doing are inherently relational: my relations with other humans are not external to me, but are part of what makes me who I am. I accept this sort of picture; what follows is meant to add to it by focusing on non-humans: how do they mediate our doing (presently), and how do we do things together with them (in chapter 4)?

Two questions may arise: why "doing" instead of "action", and why focus on technologies? I have nothing against the terms "action" and "agency", except perhaps that they have become too loaded with meaning. Action is usually opposed to passion, activity to passiveness. Of course these are useful distinctions, but I suggest that we not *begin* with them here. Instead, let us talk about "doing" quite generally. On can answer the question, "what did you do?" without worrying whether one did it altogether as an "agent", or whether there was some admixture of passivity, or whether one's description does justice to the tension between these terms. I would like to leave such questions aside for the moment.

One could make a metaphysical argument that the classical picture of deliberate agency is insufficient; it is not, though, my aim to establish this here. Instead, I am interested in showing that practically, and politically, it is important to include technologies in our picture of doing. I have said[5] that I am interested in how a person with certain commitments is to spend her time—the "what shall I do this afternoon?" level of questioning. Another part of my answer to the question of focus is that techniques and technologies, perhaps much more than deliberation and agency, are relevant to our day-to-day, moment-to-moment deeds—and to the results of these deeds for our being, our freedom, and our relationships with other (human and non-human). This should be clearer in the sequel.

[5]See chapter 1.

3.1.1 The Limits of Deliberation

We can begin by noting that words like "voluntary" and "deliberate" apply only awkwardly to much that we do. Certainly, some of my actions follow on deliberation: I make a decision about what to do, then I do it. On the other had, sometimes the very same chain of deliberation may *not* result in action.[6] For example, I have noticed that it is seldom because I *decide* to that I get out of bed: I often decide (I *think* I was deliberating—could I have been wrong?) to get up but do not—then later get up with no decision at at all—though I am certainly inclined to say I did it "voluntarily", at least that *I* did it (after all, I did!), that I was "responsible" for my getting out of bed—though, again, when I do not arise, I am sometimes inclined to excuse myself by saying that I could not, perhaps that I "tried", but my body "wouldn't co-operate" (Dualism is useful at least for making excuses!).

So we can run into some problems if we picture human doing too much in terms of deliberation; examples could be multiplied. But further, we should keep in mind that it is both logically and practically necessary that finite beings do at least some of the things they do without prior deliberation. A being that can pursue a finite number of thoughts at a time must sometimes engage in deliberations about something without first deciding to do so, or else face an infinite chain of deliberations: action is only possible if at least one non-deliberate move gets made to get things started. More crucially, it is a practical necessity that humans do much of what we do without deliberating much or at all beforehand—we would spend all our time thinking about what to do otherwise. Even when we do take the time to sort through our options, it seems to me that the range of consideration is often very limited. Mostly, we are too busy doing things to think about what we are doing, and that is simply a requirement of getting anything done (to be clear, this is not bad, but merely necessary; in many cases, in fact, acting without much thought is the very mark of skill).

The word "voluntary" has similar problems. Sometimes, I do something by accident; that was not voluntary. Sometimes, I may be forced—again, I do not do it voluntarily. So far, we have useful distinctions. But how do I *know* I did it by accident? or voluntarily, "on purpose"? I may *feel* that I did it voluntarily, but I sometimes change my mind about this in retrospect—could I be

[6] One may here recall Aristotle's aporia surrounding weakness of will (in book seven of the Nicomachean Ethics).

mistaken about such a thing? "I didn't *mean* to put the frozen vegetables in the cupboard instead of the freezer"—though it seemed intentional at the time—"I wasn't *thinking* about what I was doing."

In contrast, it is perfectly clear what I *did:* I put the frozen vegetables in the cupboard. And one can go into more detail: I opened the cupboard, I lightly tossed the bag on to the shelf with my left hand, and I airily closed the cupboard door with my right hand, without waiting for the landing. Then, the next day, I sheepishly put the vegetables back in the freezer, which, drawing on electrical power available because of the doings of countless other people, machines, and transmission systems, began the work of turning the thawed vegetables into an unbreakable icy mass.

The point of such examples is not just to "do a Wittgenstein" on certain terms, i.e., to show that they cease to be useful in certain contexts and that we had best not ask such questions at those times. More than this, I hope to bring to mind those often-neglected sorts of things we do all the time, with hardly a thought, let alone "deliberation". When we do these sorts of things, our "intentions" hardly come into the picture. I find it a useful exercise in this regard to think through a typical day and note when deliberation, choice, will, etc. enter the picture and when they do not. I think you will find that they enter the picture in important ways—particularly in deciding what projects to pursue when you come to the end of a relatively automatic period of doing—but that the majority of the time, they are simply irrelevant.

It seems to me that philosophers tend to take something like casting a vote as paradigmatic of what humans do. We are faced with options (ideally just two, and perfectly defined: vote for A or for B), and know we are so faced, of course; we weigh the evidence in the balance of our values, choose, and act. I would rather take something like breathing to be typical: one does it mostly without awareness, thought, deliberation, choice, or will—though one *can* control it, and one often does so: either consciously (to avoid the smoke) or half-consciously (when something makes one "catch one's breath"). Again, turning on the light on entering a room tends to have little or nothing of "will" or "deliberation" to it: we simply do it. This sort of description—who did what, and what was involved—is the kind I would like to thematize. I believe we can attend better this way to the diversity of things that people do.

If we are not to focus on individual acts of the will, a likely move is to consider habit, or character. If you are like me, your review of your daily actions will have revealed many things that you do simply because you have "come to do" them that way. This Aristotelian shift in emphasis does seem to go in the right direction, but there is yet another step to take. Just as do questions about choice, questions about character can give the impression that I do what I do, and there just happens to be a world around me in which I do it—that all the important factors are internal. I want us to remember that most things we do involve some technology or other. This is true even of basically social activities such as teaching or having a conversation, to the extent that they take place within a background of artifacts: clothing, architecture, lighting, etc. These things affect what we do together, and how we do it. Because all these artifacts have this kind of mediating significance, we should keep them all in mind when discussing technology—even if it seems a little odd to refer to clothing, for example, as a "tool". Because of this ubiquity of the technological in our doings, the light-switch may be a better basic example than breathing. Our picture, then, should include both ourselves (our deliberations and our dispositions) and the rest of the (human, natural, and artifactual) world in, on, and by means of which we do all we do.

3.1.2 Some Kinds of Doing

To this end, let us turn to a brief taxonomy of doing. I shall make a series of distinctions that may help us think our issues through—just one of many possible such series, I am sure.

One-offs and Practices

First, some things we do just once, while others are an instance of a practice or technique. Examples of the former, "one-shot" category tend to be creative acts of some kind—humming a new tune, writing a dissertation, painting a picture (*this* picture, not just any one). When it comes to a practice or technique, however, there is a "way" to do it—rather like a path that has already been cleared and can be followed without moment-to-moment decisions. Techniques may require very high degrees of effort, concentration, and skill; what they do not require is a radical decision about what to do: the path is already there. Playing guitar, mailing a letter, getting married, turning on the light, making a phone call, walking, cooking a meal, applying for

welfare, adding numbers, putting the baby to bed, boxing, typing, ... these are all techniques or practices (whether "technique" or "practice", or some other word, is the most natural term depends on various factors—"technique", for example, is preferred for activities with relatively precise requirements—but all have in common that there is to some degree a "way" to do them, and so we can treat them as one category). The distinction here is between things that we recognize as being somehow original, and things that are "ready-made". I mentioned painting as a one-shot doing; it may be objected that it is also a practice with its particular techniques. This is true, and there are perhaps no pure examples of the one-shot category: anything we do makes use of some technique. Certainly, we can consider our doings at various levels of granularity, and none are one-shot at all levels: painting this picture involves learned brush techniques, which are carried out within an understanding of the practice of painting (perhaps of a particular genre) generally. At still another level of analysis, however, painting *this* painting is something that will only be done once. Nonetheless, it seems true that practices or techniques of various degrees of refinement and specificity permeate everything we do. The point of distinguishing one-shots from practices is not to bring out a fundamental distinction between types of doing; rather, it is to point to different elements usually present at the same time: as I make use of various techniques, I am typically also doing something original by means of them, even if it is only to make my way through this particular afternoon. Some activities do have the distinction of emphasizing the creative, one-off aspect of doing; others—and these are very common—are quite thoroughly routine.

Free and Determined Practices

Next, let us note, within the category of practices, that some depend almost entirely on the person or people doing them. We are free, we might say, to change our way of doing these things, if we so desire. I can walk backwards, or limpingly, or on my hands; I can add numbers any old way I like—and if my sums keep coming out wrong, all I have to do is do it differently. A free practice is one that I could be taught to do quite differently, without changing anything but my "technique". Too often, I fear, we think of all practices this way. We must, though, distinguish this kind from another, equally (or more) ubiquitous: those practices that are largely determined

by my world, social and physical (What is a world? Roughly, it is what resists, what refuses to do simply what I imagine for it—it is in this sense that my world is distinguishable from my self, despite the relations I shall emphasize in chapter 4). Flipping a switch is flipping a switch; you do it vertically if the switch is mounted vertically, horizontally if it is mounted horizontally; if it has three positions, you select one of the three, if two, then one of the two. You can stand on your head while you do it, but flipping the switch amounts to the same *operation.* Generally, some things you have to do a certain way simply to get anywhere. To do them very differently, you would have to change something about the physical and social context in which you do them. So, we can distinguish between free and determined practices.

Institutionally and Technologically Determined Practices

Now, practices can be determined in a number of ways. We can distinguish first between institutional restrictions and physical ones—though these blend in practice. To catch a bus, I need to be at the stop at a certain time—not because the driver could not get the bus to me at some other time, but because the schedule says so. If I want research funding, there is a particular process, determined by people, that I must follow. In contrast, the light switch constrains me physically: that is just how that artifact works. Of physical constraints, incidentally, some are the result of human making, and these physical things and their related practices will do as well as anything as a definition of "technology".

Technologies further divide into individual objects (often called "tools") on the one hand, and the rather loosely-bounded entities we tend to call "infrastructure". This distinction between tools (the refrigerator) and infrastructure (the electrical network) is worth noting simply because the latter is highly overlooked in discussions of technology—not, as will appear in later chapters, coincidentally.

3.1.3 How to Do things Better

We distinguished above between free and determined practices; let us look into this a little further. Let us consider a possible division of what is admittedly a continuum: there are mental techniques, physical techniques, and instrumental ones. Mental techniques, we do largely "in

our heads"; physical ones also involve our bodies; instrumental ones also involve one or more artifacts. There are other dimensions along which practices can be distinguished, including the degree to which they are social, but it will be useful to have a look along this "instrumental" dimension.

Method and Operations

We can take algebra as a paradigm of mental technique. The fact that we do it on paper when it is difficult makes it an imperfect example, so let us focus on algebra easy enough to do "in my head". Let us say I want to add '25' and '34'. My method will be this: for each column of numerals, add the digits and take the result, dropping extra digits, for the corresponding column of the sum. These are the operations (yes, this method is wrong—we shall come to that in a moment). By "operation", I mean a repeatable (I can do it again and again, at least in principle), public (you could do it too) part, division, or step of a practice. So I add '2' and '3' to get '5'; and '5' and '4' to get '9'; put the '9' after the '5', and get '59' as my result. I am belabouring this example both to make clear how notions like "technique" and "method" can apply to mental doing, and to prepare the ground for discussion of how we fix problems when they come up. And a problem is about to come up. I now add '25' and '36' in the same way: '2' and '3' make '5'; '5' and '6' make '1' (the left-hand '1' gets dropped from the '11'); and my sum is '51'. Of course I should have carried the left-hand '1' to get '61', and when I did something rather like this in the first grade, my teacher was able to explain as much. That this kind of correction is possible indicates that addition is a free practice.

Skill

Call the above mistake one of method. It can be remedied by changing my operations. Notice how it differs from other problems leading to the same incorrect result. I might well know that I should carry overflow digits and add them to the next column, but I might nonetheless forget about the carried '1' while I am adding the '2' and the '3'. This is a problem of memory, in some sense of skill, and it can be remedied through practice (the more one adds up numbers, the more fluent one becomes at remembering the carries); it can also be remedied by going to a less

demanding method (hence the use of paper, or a calculator, for large sums).

Classification

The problem of skill is quite different from the following scenario: I know overflow digits are to be carried, but I do not consider the first '1' in '11' (the '11' that results from adding '5' and '6') to be an overflow digit (perhaps because they are both the same numeral). Again, I add '25' and '36' and get '51', though I shall be all right adding '25' and '37'. The problem here is one of classification. This is a rather trivial classification problem, but one can add examples—treating a person like an inanimate object *might* be this sort of error, for example. Notice that operations and classifications are closely linked: certain operations apply only to certain classes of things. For example, we can add numbers, but not (without inventing a new kind of addition) letters, adverbs, or rivers. Conversely, only certain operations are possible on a given class of things.

Attitude

Next, imagine that I hold both that overflow digits are to be carried, and that the first '1' in '11' is such a digit; and further, suppose that I am perfectly capable of executing the necessary operations without losing track of the carried '1'—but I am in no mood for addition, and am in fact listening to Beethoven and doing the frenetic dance of one who feels unobserved. My method is right, my classifications are good, and I have the necessary skill. I get the wrong answer this time because I lack focus, am not "paying enough attention", am not committed to adding correctly—I am, one might say, in the wrong "head-space". A somewhat different "head-space" issue arises if I simply do not want to carry numbers today; I may not take account of the extra '1' because I am not "open" to its being there. Again, both of these latter examples are a little contrived, but you, my reader, can no doubt think of things you do in which these various ways of going wrong do apply in important ways.

Let us take a parallel example that is more social: conversing. It may help to think of speaking a second language, since complete fluency tends to make it seem that there is no method involved at all. There are methods and operations involved here, though they are not always so clearly definable as in the algebraic case. There are of course the low-level operations of the grammar:

declension, conjugation, etc. One can have these things right or wrong, just as one can understand addition rightly or wrongly. At the higher levels of semantics and pragmatics, what our "method" is becomes rather difficult to pin down, but it is generally recognized that there are certain rules that define appropriate linguistic acts in a given situation and culture; what seems most important here is that the conversational partners have the same set of rules, whatever it is. The role of skill is more clear: a fluent speaker must not only understand the rules of the language and of social interaction, but must be able to apply them consistently and quickly—quite automatically, in fact. My knowledge of French grammar, for example, is passable; but I am unlikely to speak grammatically much of the time, unless I speak painfully slowly. I know the method, but I am not highly skilled. I also have classification problems: I know how to speak informally (using *tu* as the second person singular pronoun) and formally (using *vous*), but I have only the foggiest notion of who counts as a *tu* and who as a *vous*. Finally, "head-space" matters too when conversing: if I am not paying sufficient attention to my conversation partners, I am likely to misunderstand them; hostile or uncaring attitudes cause problems of their own.

I shall offer one further example (one that will return). The practice of improvised comic theatre ("improv") is a physical one, not only mental, but that need not concern us at the moment (it is also social: usually two or three people do it together at any time). Improv is rather loosely defined compared to algebra (it is not clear whether the notion of "operation" could apply here), but it does involve certain goals and related classifications: one wants to establish for the audience a strong sense of setting, an understanding of the characters in the improvised scene, and of their relationships; one generally wants to act out a conflict, to do it rapidly enough to make for comedy rather than drama, and to bring the impromptu story to something resembling a conclusion. There are some methods involved in this (in the form of patterns that tend to work in various contexts) but their role is small; there are skills like staging, vocal projection, and mime (to show what is imagined to be on stage—improvisers generally shun actual props and set-pieces). But above all, what every improviser soon learns is that being in the right head-space—we use words like "focus", "acceptance", and "commitment"—is overwhelmingly important. Without these attitudes, would-be-comic scenes quickly dissolve into chaos, bog down in wrangling over what ought to happen, or wander aimlessly. So at least in certain largely mental and physical activities,

head-space, attitude, or "mind-set" is key.

But not always. We have just seen a number of ways in which the practice of a mental technique might be criticized and improved—answers to the question "what is involved in doing it better?"—there are method, skill, classification, attention, commitment, and focus. All but method and skill are frequently referred to as "attitude", "mind-set", and the like. These we improve simply by deciding to change our attitude—and perhaps with the help of auxiliary techniques aimed at getting us in the right "place" (in improv, for example, we do various "warm-ups" before a show with this aim). Skills, we can improve by practising; method we can correct, or again, practice so as to memorize the operations.

Let us now turn for a moment from mental to physical practices, before moving on to instrumental ones. Physical techniques directly involve the material, but it provides only minimal constraints, aside from bodily ones. Any common physical technique will of course involve the built environment, so the difference between physical and instrumental is a matter of degree—but of enough degree to matter, I think. We can think here of martial arts, of running, of singing, of simply walking. We can see that again, method, skill, and various kinds of attitude may come into play. Additionally, we here have factors like strength and dexterity, which often make practice the central means to improvement.

Instrumental Techniques

Finally, we come to instrumental techniques. These, I have already suggested, make up a large portion of what we do. Here, we can think of using a programmable thermostat—or anything else with a "user's manual"—or for a more complicated picture, driving a car (but also writing with a pen, talking on the phone, drinking from a glass, living in a house...). While all the categories of error or improvement so far mentioned certainly apply to some such cases, notice that our methods, our focus, some of our classifications, and even some of our goals and standards are constrained or even determined by the technology—that is to say, instrumental techniques tend to be determined ones. I shall say more about these constraints later (particularly in chapter 5), but for now, let us consider briefly two examples. The contributions of the tool are very visible in the case of the thermostat. Want to do something with it? Look in the manual: *what* you can do, *how*

to do it, and, more subtly, how to measure your success at it—this information is all in there; this is of course just a report of how the thermostat user-interface has been designed. In fact, if you do not have the manual, you may well be able to "figure it out": the interface will tell you itself what operations are meaningful.

Notice here how vanishingly small become the contributions of skill and attitude. It is all a matter of method—operations determined by the interface, and of classification—into categories also determined by the interface: there may be "desired temperatures", "times", and "days", and all your considerations must boil down to those categories before you can do a thing about them.

Driving a car is rather different: there are significant contributions of the mental (are you awake? careless?), physical (ice on the roads?) and instrumental sort (gauges tell you things about your car and its behaviour; you have gears to choose from, an accelerator, and a brake; you can steer in the direction you want to go). Often forgotten in this context is the infrastructure of roads, signals, and gas stations, without which the car would be a quaint toy, and which constrains our operations and standards with respect to routes, for example. The car is a decent representative, I think, of much that we work with: there are aspects of it that depend on our choices, our skill, our attitude, and there are also aspects of its operation that are quite constrained by the technology.

In general, there seems to be a continuum in techniques and practices from mental to instrumental, and correlatively from free to determined: as more and more artifacts become involved in an activity, there is a tendency for that activity to be more determined by those artifacts. This is not to say that every mental technique is free, or that every instrumental technique is highly determined; but, where technologies are involved, it will be worth looking for the ways in which they determine our doings.

3.2 Media and Attitude

Next, I wish to underline a point I have been making about attitudes; indeed, much of the detail above is there only to help make this point clear. Consider for a moment the ways in which our experience of tools can change.[7] A guitar may appear sometimes as a sort of "object" against

[7] A famous example of such observations is Heidegger's discussion of the hammer in *Being and Time* (Heidegger, 1962).

which I place myself—say when I have to carry the blasted thing some distance, or I drop the case on my foot. Other times, it may present itself as a sort of equal partner or collaborator—think of B.B. King and "Lucille". On still other occasions, in the heat of performance, it may seem to the musician almost as an extension of his own body. As a phenomenologist would say, one constitutes the guitar differently at these times. The same may be true of every artifact, every entity in fact. But our operations are independent of much of this variation in constitution. *To the extent that the artifact determines our operations,* the way we work with it is independent of our constitutions—as it is of our focus, our commitments, our attitude, or mind-set generally. To precisely this extent, all criticism, all hope for change, must involve a change, not of our mind-set, but of our tool-set. This is the point I wish to emphasize; I shall return to it in chapter 6.

So it appears that tools and infrastructure, by constraining the way one operates, can affect one's relations with others, both human and non-human (and perhaps one's self too), independently of one's attitude toward any of these things. I do not mean anything particularly ambitious here by "relations"; what we tend to do to and with things is surely a component of our relation to them, whatever else is (a more ambitious claim, which I take to be true, but will not defend here, is that all other sorts of relation are determined by these "doing" relations). If we want to critique and change some of these relations, we can do it in terms of any of the categories I have mentioned (method, classification, skill, focus, commitment, determined operations). Having the right ontology, attitude, approach, etc. may be a very small part of the problem. This discussion has thus led us back to the "media" thesis with which this chapter began: technologies mediate our relations. I hope that the potential practical and political impact of this thesis is somewhat more clear at this point.

One further word, to forestall a rather metaphysical sort of objection: "turning on the light (by means of the switch)" is what it is, is recognizable as such, regardless of whether I am hallucinating or in a state of cosmic awareness or not thinking about it at all. But are operations really independent of subjective states? Indeed, we must admit that if all humans were quite different (such that visible light were not involved in an important way in our practices, or we no longer cared about seeing), the operation would not have the same meaning, and in that sense operations are not *essentially* independent of their subjective constitution. Rather, they are independent of

certain *particular* constitutions, certain particular experiences of or intentions toward them. It does not matter how I experience turning on the light-switch; it is identifiable as such within the pragmatic and linguistic context we share. Operations are properly described as identical despite variations in attitudes, constitutions, and details of execution; they are so classifiable because of their significance in our shared world of action.

The Neutrality Thesis

To deny the media thesis would be to hold the neutrality thesis: artifacts are neutral, and only humans determine how we use them; some do indeed seem to argue for such a thesis, so let us consider it directly.

There is a universal version of the neutrality thesis: *technology* is neutral.[8] I shall not dispute this claim, as claims about technology as a whole are not our interest here.

The claim that concerns us is that *artifacts* are neutral. If this is so, then it is human choices exclusively that matter, and "the entire problem is one of values or *desiderata*, not of means or technology *per se*."[9] Or, "it is not the machine that is frightening, but what some men will do with the machine... 'Guns don't kill, people do.'"[10] If we hold that artifacts are neutral, then we can largely ignore them as practical philosophers.

The argument for neutrality is that a given artifact can be put to many uses: "A knife may be used for cutting loaves of bread or throats; a powerful drug to cure or kill."[11] Feenberg may appear to give a more involved example: the French Minitel was a computer terminal "intended to access information services," but which soon was modified by users to be used "for anonymous on-line chatting."[12] Users succeeded in "introducing human communication where only the centralized distribution of information had been planned." An old bathtub can be a planter; a ladder can be a set of shelves; and the list goes on.

Notice, first, that this argument is most plausible when relatively general artifacts are considered—

[8]We have seen an example in the first chapter: Emmanuel Mesthene's claim that "Technology spells only possibility, and is in that respect neutral." (Mesthene (1972), p. 111.)

[9]Bunge (1984), p. 22.

[10]Pitt (1987), p. 113.

[11]Mario Bunge, cited in Woodruff (1997), p. 121.

[12]Feenberg (1999), p. 126.

knives, for example. Friedrich Rapp points out that highly specialized artifacts are much less flexible: "One will never, for example, be able to find a peaceful application of highly specialized military weapons... Once the choice of goal is made and the particular technological system constructed, there is typically not much leeway as to its possible applications."[13] Hammers may be more neutral than smart-bombs.

Next, we can distinguish between purposes and methods: what we are trying to do, as opposed to how we go about doing it.[14] Artifacts are to varying degrees limited as to the purposes they can serve: one cannot use a thermostat to travel; one can use an airliner as a ping-pong ball, but the game will be poor; one cannot, to return to Bunge's example, use a knife as a clamp—knives split things apart rather well, but do not hold them together. Even a hammer, which *can* be used to drive and pull nails, prop open doors, soften meat, shape metal, etc., may be ideally suited only to the first two tasks.[15] On the other hand, method of operation is highly determined by design; operations are largely designed in. There is little flexibility in how one uses a hammer to hammer, a car to drive, or a refrigerator to store food. We should admit that innovative uses or methods of use are always possible, but there are only a limited range of these.

And what of the Minitel case? We should note that Feenberg himself is not arguing for artifact neutrality (indeed, Feenberg seems to reject the neutrality thesis). Rather, he opposes determinism—the claim that the future of a technological system once launched is out of human hands. What Minitel showed was that design does not *completely* determine use, but leaves room for subversion of its intended purposes. Nonetheless, the Minitel terminals were open to a limited range of uses, and all of these share certain characteristics (operation via a terminal, for example). Even a very general-purpose artifact like a computer terminal is only operable in a limited (if large) set of ways; and many technologies are far less open to creative redirection.

In the end, the neutrality thesis rests on a false picture of doing: humans decide what to do, then they do it, perhaps using some tool or another—this must be the assumption. In fact, *what we do*—our operations, our daily habits, the interests and purposes that these imply—is often

[13] Rapp (1978), pp. 54–55; also cited by Woodruff (1997).

[14] Woodruff (1997). Arguably, methods are just intermediate purposes, a point that is significant when we consider that the method of using, for example, a gas stove requires me to have as a purpose the procurement of natural gas.

[15] ibid., p. 122.

inseparable from *what we do it with.*

Concluding Remarks

The kind of claim made above—the media thesis—can be made in a number of different ways. Now, I know of two ways to take the media thesis too far. Gabriel Marcel demonstrates one when he writes, "it is obvious that every instrument is an artificial means of extending... a pre-existing power."[16] This is not obvious at all, even if "extending" is taken very broadly or changed to "altering". The mistake here is to hold that technologies *only* mediate: they constrain, enhance, or alter pre-existing activities, and this is a complete picture of technology's significance. It seems to me, on the contrary, that technologies also *create* modes of doing. Consider a musical instrument: a guitar is not a new way of singing, but a whole new set of sonic and musical possibilities. A video game (like them or not) likewise is a creation: the game, along with its particular challenges and opportunities for achievement, did not exist before the hardware and the software. Technologies can be constitutive, like rules of chess (without which, there is no chess). The necessary supplement to the media thesis—technology as creativity—is the flip side of the technological coin, and while not the focus here, it is worth remembering.

The second way to overdo the media thesis is to fall into a false dichotomy. I turn back to Verbeek for what seems to be an example: "technologies," he insists, against Borgmann, "do not alienate humans from reality, but help shape their relationship with it." The argument seems to be that either technologies mediate or they alienate, and since they do the former, they do not do the latter. But the alienation thesis is just a species of the media thesis: it says that the relationship (at least some) technologies shape is one of alienation. In general, the relation could be an alienated one, or an engaged one, or any number of other things. The question is what *kinds* of relationships we end up with. The value of the media thesis is precisely that it opens up this question, not that it closes it.

Similar remarks apply to Latour's rather violent rejection of "barbaric" calls to put "humans face to face with things."[17] To be fair, Latour is talking about impoverished notions of both

[16]Marcel (1950), p. 99.
[17]Latour (1995), p. 280.

humans and things; if his outburst is directed against the idea that human doers can be understood in mutual isolation from the things done to, then it is in agreement with the thrust of our next chapter. But we should allow that there may be a sense in which the relation between humans and things is sometimes alienated or abstract, or again, authentic—what sense remains to be seen of course. Consider, though, a trivial example: driving with a blindfold. That would be bad use of technology: much better to face the things around you. The blindfold-mediated relation is not just different, but dangerous, precisely due to all the vitally relevant reality that gets screened out. So there are at least *some* cases in which being "face to face" with things may be reasonably recommended.

The unlikely example of driving-with-a-blindfold is an argument that in principle, a technology can both mediate and abstract, separate, or alienate. Given this, then, and the pervasiveness of technologies in daily doing, I take it that a more interesting question is open: do some technologies separate us from some things and people, and might this not affect us both often and significantly?

Chapter 4

Collaboration

We have been looking at what humans do. I now want to draw from a number of sources a related idea: non-humans do things too. In ecofeminist writings, this idea often appears as what I shall call "the agency of things"; in Actor-Network Theory both humans and non-humans are actors; in Gabriel Marcel we find a complement in the "non-autonomy" of humans. A consequence of this theme will be this: all our "actions" are in fact collaborations. How, then, does one act as though collaboration were not a fact? The answer I shall suggest, drawing on Marcel, is this: by *characterizing* parts of the world—by treating them as a limited list of attributes—we set them off from ourselves and their contexts as mere objects of our action. Thus, I dwell on the theme of collaboration first, to enlarge the picture of doing sketched in the previous chapter, and second, to set the stage for considering how our collaborative relations can be hidden by technologies.

4.1 Non-human Agency and Autonomy

Ecofeminism and Non-humans

Let us first look at what some ecofeminists have said about the agency of things. I draw a number of ideas from this body of work: the notion of a separation of humans from nature (chapter 2); ideas about the politics of this separation (chapter 6); and here, the idea that we need to address this separation by (at least) recognizing non-human agents.

Various levels of discussion—political, theoretical, and spiritual—intermix in all these au-

thors, but Maria Mies makes the point largely in terms of politics. Certain humans and non-humans are often, she says, treated as "passive sites": "Nature, women, and non-white people merely provide 'raw' material."[1] But this "rawness" is illusory: all these were already productive, already in relation, already *doing* things. It is because they are regarded as passive, raw, unproductive that women, non-whites, and nature are seen as open to exploitation—an exploitation that affects them jointly. "The 'activation' of what has been, or is being construed as 'passive' according to patriarchal perception, becomes then the most significant step in the renewal of life."[2] It is vital to recognize the activity, the agency, of what we thought was passive. The suggests an alternative kind of science: one in which the research object has its own dignity, soul, subjectivity.[3] It also suggests that our notion of the good life ought to include "respect for all creatures" and "belief in the subjectivity of human *and* non-human beings."[4] So the categories of subjectivity and activity are to be extended to the non-human world, to correct a political error.

Stephanie Lahar, while explicitly interested in politics, takes a more theoretical, ontological approach. She calls for the "rejection of the subject/object split at its root—the opposition of human consciousness and mechanical nature—and the adoption, instead, of an ontology of nature as *fundamentally material and subjective.*"[5] By positing human consciousness in opposition to nature, we create an artificial split between subjects and objects. Lahar's idea is to allow that natural phenomena are subjective too, though not in the same way as human consciousness. We may complain that Lahar does not so much reject the subject/object dichotomy as bring nature over to the subject side—but for our purposes it is enough to note that we again have a call to move from one picture to another: from the notion of an active subject working on a passive object, to the idea that both are in some way active.

Susan Griffin gives us a statement of the same thesis from a more spiritual angle, a sort of animism really. She suggests that, "from the scientific practise of studying material existence apart from... spirit... unwittingly a world of matter apart from spirit was created."[6] This seems

[1] Mies and Shiva (1993), p. 25.
[2] ibid., p. 34.
[3] ibid., p. 52.
[4] ibid., p. 254.
[5] Lahar (1996), p. 10.
[6] Griffin (1995), p. 33.

to imply that all the world is in fact enspirited: it is only because of an abstraction necessary to science that we see it otherwise. Griffin also stresses the intimate relatedness of each of us to our world in terms of "that beautiful paradox of being by which I am both a solitary creature and everyone, everything."[7]

Now, it will not (directly) do justice to the variety of interwoven concerns at work above, but I want to summarize the thrust of these quotations this way: when it comes to doing things, non-humans are similar to humans. The world is not inert, but is an actor too, a sort of partner in a rather intimate dance.

Actor Networks

I should mention so-called Actor-Network Theory[8] again, here: certainly this notion of interacting humans and non-humans fits well with that methodology, in that the actors in (and constituted by) networks are said to include humans, cats, doors, etc.[9] The key to ANT's methodology is a refusal to prejudge any differences of kind among the entities under study: the contributions of humans and non-humans alike are considered on equal theoretical footing. "The actor network can thus be distinguished from the traditional actors of sociology, a category generally excluding any nonhuman component."[10]

Michel Callon applies this approach to a study of electric car technology (the VEL) in France in the 1970s and 1980s. He describes the actor network in terms of two mechanisms: simplification and juxtaposition. Simplification is a sort of practical abstraction: "In theory reality is infinite. In practice actors limit their associations to a series of discrete entities whose characteristics or attributes are well defined."[11] In the VEL case, for example, "towns could be reduced to city councils whose task is the development of a transport system that does not increase the level of pollution.... This definition would remain realistic so long as the simplification on which it was based was maintained."[12] As it happened, the simplifications failed: among other things,

[7]Griffin (1995), p. 150.

[8]The theory's founders discuss some of the problems with the phrase "Actor-Network Theory" in Law and Hassard (1999).

[9]Latour (1995), to which I have already referred, is a very concise presentation of a network with these components.

[10]Callon (1987),p. 93.

[11]ibid., p. 93.

[12]ibid., p. 94.

catalysts became too easily contaminated, infrastructure would have been needed that no-one was willing to provide, and third world countries raised the price of important materials. As the catalysts failed to behave according to the ideal models, "[a] 'black box' whose operation had been reduced to a few well-defined parameters gave way to a swarm of new actors: scientists and engineers... hydrogen atoms... third world countries..., etc."[13] Juxtaposition is the association of simplified entities in a network; this set of associations "is the context that gives each entity its significance and defines its limitations."[14] There is thus a double-ended process of abstraction on the one hand and connection on the other; the possibility arises that networks can thus grow while at the same time each element appears as a simple black box—this possibility will be important in our discussion of abstraction and power (chapter 6). Notice that juxtaposition implies that no actor is a *lone* actor: their activity is only intelligible within the network.

4.1.1 Gabriel Marcel and Non-Autonomy

We can derive a similar idea from Gabriel Marcel, whose thoughts are both interesting and problematic enough to deserve a longer discussion here. Marcel's theory of technology is superficially very "old-school": he seems to equate technology with applied science (missing the more complicated relations between the two), and seems to hold that it is basically bad and ought to be restricted to its proper sphere.[15] This all-or-nothing attitude leads Marcel, like Heidegger, into paradoxes. On the other hand, in and around this apparently simple theory are some rather more subtle ideas, ones that lead beyond such paradoxes.

Although he is not an entirely systematic philosopher, Marcel does use a number of terms in fairly consistent and correlated ways. These tend to occur in pairs. We can take the pair Problem and Mystery as fundamental—though arguably it is no more so than Having and Being, primary reflection and secondary reflection, or Natural and ontological.[16] These pairs all line up with each other, along with Technique (or applied science) and Hope (or metatechnique), as follows:

[13] ibid., p. 94.
[14] ibid., p. 95.
[15] see, for example, Marcel (1971), p. 260.
[16] I will capitalize terms that seem to have special meaning for Marcel so as to distinguish them from the more general sense of "problem", "mystery", etc.

Problem	Mystery
Having	Being
primary reflection	secondary reflection
Natural	ontological
Technique (applied science)	Hope (metatechnique)

Cases of Having (or possessing) something are loci of Problems to be solved, and things had are potential objects for technical manipulation; we are here at the level of the Natural, or primary reflection. On the other hand, when we consider Being (our own Being is Marcel's central case), we are in the realm of the Mysterious, of ontology, of secondary reflection; Technique is here out of court, and any doing is thus metatechnical. Much as Heidegger contrasts art to technology, so Marcel contrasts Hope to Technique.

What makes for a Problem is a sort of separation between myself and the object I am working on: "Wherever a problem is found, I am working upon data placed before me; but at the same time, the general state of affairs authorizes me to carry on as if I had no need to trouble myself with this Me who is at work;" in contrast, "A mystery is a problem which encroaches upon its own data and invades them, and so is transcended *qua* problem."[17] Whenever I am working on a Problem, I myself must be placed in brackets; but where my own Being is involved, this is invalid, and we are in the realm of Mystery.

It is a division between subject and object that makes for a Problem; when we see the world in this divided way, we are at the level of primary reflection. Such reflection dissolves the unity of experience, while secondary reflection "reconquers that unity."[18] It is Problems that Techniques attack: "every genuine problem is subject to its own technique, and every technique consists in resolving problems of a determinate type."[19] So Problem, Having, primary reflection, and Technique all represent a sort of schism—a schism which is to be repaired in Mystery, Being, secondary reflection, the metatechnical.

[17]Marcel (1965), p. 171.
[18]Marcel (1950), p. 83.
[19]Marcel (1965), p. 103.

The Paradoxical Marcel

There is a way of reading Marcel that makes him quite paradoxical. This is not an entirely idle possibility, since Marcel seems to read himself that way at times. On the other hand, there is a way of reading Marcel in which paradoxes give way to syntheses. Let us consider the paradoxical reading first.

Marcel does not simply lay out the contrasts between Problem and Mystery, Technique and Hope, etc., as I have above. Rather, he begins with primary reflection, Technique and its Problems, as the obvious way in which we tend to deal with the world. From there, he wonders about the possibility of "a metaproblematic, metatechnical sphere."[20] This gives us the most superficial version of pragmatic paradox: if Technique is how we do things, then is not all criticism of Technique a call for passivity?

Indeed, Marcel seems to run into this difficulty, and on a certain understanding of his main oppositions—Having and Being, Problem and Mystery—the difficulty looks insuperable. Primary reflection divides experience; secondary reflection unifies. To Have is to be separate, and to solve problems likewise; to Be is to be connected. The fundamental distinction is between division and connection, multiplicity and unity—and Marcel wants to reject one half of this dichotomy in favour of the other.

But surely there are reasons to reject the other pole too. How, after all, could I do anything, achieve anything, if I am simply one with everything else? Marcel aligns a further term with Having: to Have is "to have the disposal of," i.e., "to have power to."[21] Things that we have are at our disposal; they are there, in front of us, Problems, that we can attempt to dispose of. If we do not Have something, we do not have it at our disposal. But if we must add "at our disposal" and "not at our disposal" to the above table, then it appears that the realm of Being, of Mystery, of the metatechnical, is also a realm of powerlessness: a Mystery is too close to come to grips with; I can no sooner grapple with a Mystery than fly by picking myself up by my own feet.

Marcel does indeed run into this kind of problem. Hope, in his terms, is the metatechnical, and so Hope cannot use any Technique. Nonetheless, he wants to say that it has a "real efficacy,

[20]Marcel (1965), p. 103.
[21]ibid., p. 150.

which is the counterpart of a complete inefficacy on the phenomenal level."[22] "We cannot help," he admits, "asking ourselves how hope can be effective; but the very form of the question takes it for granted that we are unconsciously comparing hope to a technique which operates in a mysterious fashion, let us say magically." At the early stage of his work at which this passage occurs, Marcel compares the action of Hope to that of a river when dammed: "I would say that the estuaries of Hope do not lie entirely within the bounds of the visible world." This does indeed sound like a sort of magical technique, one that works like any other, except that its channels are supernatural. Marcel is clearly unsatisfied with such a notion, even though he "cannot escape from *stating* [the problem], and from *asking myself* confusedly what sort of power can belong to *no-action* and to *no-technique*."[23]

With reference to our broader discussion on what things do, if it is a failing to ignore the agency of things—to dominate nature, as it is often put—then we should eschew action insofar as it implies a passive object. But if it is also a failing to accept an unjust state of affairs, then we should act. We seem to be called on to obey three paradoxical injunctions: first, act without acting;[24] second, be passive without being passive; and third, do the first two at the same time. So we must both act and be passive without either acting or being passive.[25]

Now, it seems to me that there are certain kinds of solutions to such tensions in general. One can, first, reject one pole or the other of the dichotomy. If neither extreme seems satisfactory alone, however, one has further options. One can bring in time: sometimes the one, sometimes the other; or one can simply insist on the tension: one must keep both in play, in balance. I think, though, that it is not just a matter of taste whether one rests there or insists on looking for a way to dissolve the tension. For if the tension between two terms is to be maintained in some sort of balance, we can ask by what principle this balance is to be kept. The answer to that question, whatever it may be, effectively eliminates the tension; if, on the other hand, there is no such principle, we can treat the dichotomy however we like—choosing one pole or the other, for

[22]ibid., p. 76.

[23]ibid., p. 77.

[24]Lao Tzu, p. 7, III, line 10: "Do that which consists in taking no action."

[25]I am not sure how closely these paradoxes relate to Kant's antinomy of freedom and determination, and to Wilfrid Sellars' problem of the "manifest image" vs. the "scientific image" (Sellars, 1963); it seems to me there is a relation, but that my resolution here may not help much with their difficulties.

example. So as far as I can see, we are always justified in enquiring further when faced with such paradoxes, either to dissolve them entirely or to find a way of balancing the terms. If we cannot do either, I think we must simply say—and this is not to disparage the appreciation of a "beautiful paradox of being"—that we do not yet understand the matter.

In the present case, I cannot simply seek pure activity, if there is anything to the notion of an "agency of things". Likewise, for practical reasons (I have commitments and choices to make) I cannot turn to complete passivity instead. It is not clear how I could decide when to be passive and when active. So we are left with a tension, which we should like to dissolve.

The Synthetic Marcel

This paradox of "acting without acting", of powerless power, arises if we take each of Marcel's pairs of terms to be thesis and antithesis, all based on the opposition between separation and unity—for we cannot easily reject either of these poles. But not all of Marcel's terms come in pairs; some come in sets of three, in which the first two are a dichotomy that is transcended in the third. Perhaps we should take Mystery, Being, secondary reflection, and the metatechnical to likewise be *syntheses*—ones that transcend precisely the dichotomies of same and different, action and passivity, power and powerlessness. Read this way, Marcel offers not paradoxes, but a way past them.

This synthetic Marcel is most evident in his discussions of autonomy and freedom. He rejects the Kantian dichotomy of autonomy and heteronomy; freedom, for Marcel, is "non-autonomy".[26] Heteronomy is administration by another, and so is not freedom—so far, Kant and Marcel agree. But where Kant would have us give law to ourselves, Marcel sees this self-administration as involving "a kind of narrowing or particularization of the subject;" it is "Life itself compared to an estate, and treated as capable of being administered or managed."[27] In contrast, he calls attention to acts of "sanctity and of artistic creation, where freedom glows with its fullest light."[28] Creativity and freedom go together, but are not autonomous: "For the saint and the artist alike, autocentricity and the self are entirely swallowed up in love;" but as Kant failed to see, "the self

[26]Marcel (1965), pp. 130ff., pp. 172ff.
[27]ibid., p. 130.
[28]ibid., p. 174.

can and should be transcended without there being any need for heteronomy to replace autonomy in consequence."[29]

In freedom, in creativity, in "effective participation", in secondary reflection, in Mystery, in Being, various dichotomies disappear: activity/passivity,[30] within/without,[31] complete control/no control,[32] etc. In a key passage for the "synthetic reading", Marcel ties the subject/object dichotomy to the Problematic too. "If you posit the primacy of subject-object... the existence of others becomes unthinkable."[33] In other words, others are not really others at all if they are only objects of my perception or my action (although Marcel is here discussing epistemological objects, the remark seems to shed light on doing as well: if a subject is what acts, how can I be a subject if there are any others in the world, for then my action will be limited—we have to start somewhere else to allow for the doings of others). Marcel goes on to distinguish between treating someone as a He, as Nature, as "an animated object"; and, on the other hand, treating him as a Thou, as freedom. On the paradoxical reading, we would expect that the other as Nature would be separated from the self, but that the distinction between self and other would be erased in "freedom". But, in what is thus an odd statement on this reading, Marcel then claims that the other is only other *qua* freedom—that *qua* Nature he is identical with myself.[34] Now, the Natural is the Problematic, the Technical: what Marcel is saying here is that far from erasing it, the metatechnical is what makes genuine otherness possible. Here, at least, Marcel cannot be thinking that secondary reflection means sameness instead of difference. Rather, the same/different dichotomy vanishes at the ontological level; otherness does not depend on a sharp distinction between same and different.

So we have two readings of Marcel, turning on how the Problem/Mystery distinction relates to the divide/connect (or different/same) distinction. The paradoxical reading takes these to be parallel dichotomies, and ends in an unresolvable tension between the poles. The synthetic reading takes divide/connect and various related dichotomies to fall under the Problematic, and to be

[29]ibid.
[30]Marcel (1950), p. 117.
[31]Marcel (1965), p. 150.
[32]Marcel (1950), p. 97.
[33]Marcel (1965), p. 105.
[34]ibid., pp. 106–107.

transcended in Mystery. The second reading is of course my favourite, though I would not claim that Marcel maintains this approach consistently; I am not certain that he clearly saw these two possibilities.

A whole list of dichotomies—different/same, divide/connect, self/world, inside/outside, no control/complete control, at my disposal/not at my disposal, subject/object, dominating/dominated, activity/passivity, autonomy/heteronomy—are supposed to disappear at the level of secondary reflection—but how? The answer seems to be that these are all useful ways of characterizing reality, but none of them can be strictly applied to the world in its full concreteness. They are abstractions. Marcel speaks of characterization—the enumerating of some thing's properties—as a move away from reality: "If I adopt that attitude to Reality, which all efforts to characterize it would presuppose, I at once cease to apprehend it *qua* Reality: it slips away from my eyes, leaving me face to face with no more than its ghost... It is the construction of a little abstract effigy, a *model* as English physicists call it, of a reality which will not lend itself to these tricks.... Reality will only play this game with us in so far as we cut ourselves off from it."[35] Characterization is thus a sort of dead abstraction: one treats reality as though it really were nothing but a particular set of predicates. When we do this, we run into all the dichotomies and paradoxes we have been discussing; we substitute a Problem for a Mystery.

Why does this happen? Characterization, it seems to me, allows one to draw a sharp line between the self and the object, and between the object and its context. If, on the other hand, one deals with the manifold interactions that make up any event, the line blurs (engineers rely on characterization for much this reason; in the next chapter we shall see how characterization functions in design, and how it is essential to defining the Problems that engineers solve).

There are two points to take from the above discussion. First, the contrast between active subject and passive object is of limited use in describing the doings of humans and others. Second, the distinction can only be maintained by means of an abstraction. Marcel goes so far as to define object-hood in terms of separation: "The metaphysical essence of the object as such is perhaps simply its power of sealing-off."[36] We might add that subject-hood is also defined by this artificial division: subjects and objects are created together by reducing some part of reality to a set of

[35]ibid., p. 169.
[36]ibid., p. 113.

characteristics. The reification of these characteristics is what makes for Problems; what we need now is a way of describing what is left out when this characterization occurs.

4.2 Collaboration

A word Marcel seldom uses appears at a key point, just where he distinguishes between the other as Nature and the other as freedom: he says that when I regard the other as I ought, "I *collaborate* with his freedom."[37] This word will serve our purposes well, I think. Referring as it does to "doing together", it fits a discussion of doing—of practical philosophy—better than related terms such as Mystery or secondary reflection. Moreover, it captures the simple response to paradoxes of action that arise when we think in terms of active subjects and passive objects. If I am the subject of an action (one involving the two of us), then you must be the object; if you are the subject, then I must be the object. If one of us is active, the other is passive. One of us must always dominate, and the other be dominated. All action is mastery; the alternative is slavery.[38]

But we are not in the least astounded when two people, for example, play music together. We simply say that the performance is a collaboration. I suggest that (for our purposes) we regard everything this way: all that we do is a collaboration. Activity and passivity, action and passion, are perfectly useful as practical categories: they apply in degrees (but only in degrees) to various situations. But if we take these notions in a metaphysically pure sense—if we think we must either act, as the lone source of the action, or remain inactive—then we can only see ourselves as either dominating or passive. In this way, it is paradoxical to speak in terms of activity. Instead, we should say that we are always collaborating with humans or non-humans or both. In different situations, different words may be best: collaboration, negotiation, even struggle or outright fighting—but these are all ways of doing something *together.* We never act alone.

One could object that the "agency of things" has been only a hypothesis to this point. Why not reject it and avoid the paradox that way? *People,* we should say, are actors; other things are

[37] ibid., p. 107, italics added.

[38] Accounts (e.g. that of Habermas) that treat subjectivity as fundamentally intersubjective do not seem to have this problem.

not. The paradox remains in interpersonal relations even if this is granted, but it need not follow that we should extend the notion of collaboration to non-humans. So let me try to make clear why it is useful to do so.

First, we can notice that things do in fact *do* things. It is quite natural to speak this way. What do trees do? They grow, they spread their roots, they bud, they drop their leaves. Furnaces go on and off, they blow warm air, they heat our homes. What is this nail doing here? Holding together these planks. This is not just a linguistic point: particularly in our more automatic moments, it means largely the same thing, so far as I can tell, to speak of humans doing things or to speak of non-humans doing things.

"Inert" objects are active too. We understand this about them, though we may not think this way often. A key feature of inert objects is, of course, inertia. But at least since Newton we have understood that inertia is partly a matter of exerting force in certain ways. "For every action, there is an equal and opposite reaction." If I push the rock, it pushes back. It resists change in its velocity. Thus, even to be inert is to do something. This sort of doing matters, too: if the rock did *not* push back, I would have no way of moving it, no way of getting a grip on it; I need its help to manipulate it. This is an abstract description of trying to move a rock, but even at this level, we can see how the notion of collaboration might apply.

The rock is an agent, an actor? Granted, words of this kind can sound odd in some applications. Not always, though: "why is the plant growing that way? It is *trying* to reach the light." But does the plant "intend" to do this? "wish" to? do it "deliberately"? Certainly, we do not want to say everything about plant activity that we say about human activity. Humans and non-humans are not the *same,* nor would it make any sense to say so—humans, for example, have an experience of the world, a proper phenomenology, and plants, apparently, do not. Also, plants tend to be greener than humans. Humans and non-humans differ; so, how important are these differences for describing what happens and why? Sometimes, they are very important—of course it is often of the essence that humans deliberate, experience, etc. Sometimes, though, it is not. After all, we have recently been reflecting on how much humans do with little or no thought. It makes sense to say of ourselves that we are agents—but only in some instances, in some respects, and to some degree. So if it is too much to speak in general of "non-human agency", we should remember

that doubts arise about "human agency" too.

It matters what we are doing with these phrases. I suppose that if what interests us about agency is its deliberate aspect, in the sense in which humans alone deliberate, then we should say rocks, trees, and robots are not agents—and humans are mostly not either. But if our interest is in how things get done, then we ought to attend to *all* our collaborations. As in chapter 3, the question becomes simpler if we ask it this way: "who did what?" Many of the "who"s will not be people. Thus, I want to suggest we try the collaborative viewpoint: it will yield, I think, a good description of how we all do things—how both humans and others do things, that is. The notion of collaboration does get us out of paradoxical questions about action; perhaps more importantly, though, it draws attention to important facts: to the constant contributions of various others to all we do; and, too, to the manifold complexity of our interactions.

Improv as Collaboration

It may help to consider a clear case. Now, if everything you do is an example of collaboration, what need is there of an example? I have two answers. First, there are degrees: in some situations, most of the initiative clearly belongs to one party or another. Second, our collaborations can be more or less obscured by the way we do things (we shall later focus on this possibility). Let us, then, observe a situation in which the collaboration is altogether explicit: improv comedy. These actors on stage show what it is to think about doing without actors.

In improv, there is no script; usually there are nothing but an empty stage, a few improvisers, and an audience. The sequence of events, the characters, and the setting, get invented as the events unfold. The usual way of analyzing this is in terms of "offers": these are actions, lines of dialogue, facial expressions, in general any bit of information about the story that is unfolding: the actors make offers about what happens next. Superficially, then, the scene is just a series of offers, each made by one improviser or another.

However, there are two things to realize about these offers. First, they are nothing until they are "accepted". Acceptance requires some reaction to the offer: one performer winks, the other looks shocked. Without the shock, the wink is undefined—was it friendly, lecherous, a tic? Offers, then, are really offer–acceptance pairs. Second, every offer (with the exception of an

initial one, usually from the audience) is really an acceptance of all previous offers. Each is as much offer as acceptance, as much reaction as action.

Thus, it is often quite impossible to decide where a particular twist of plot originated. The story is thoroughly a collaboration. Interestingly, seeing it this way is key to improvising well. The more one accepts, the more one offers; but the more one tries to "write" the scene oneself—the more one tries to decide by oneself where it ought to go—the more one fails to accept other offers and the less interesting and entertaining the scene. Collaborating well, here, is a matter of being open and responsive to everything in one's environment (primarily the other players, but also the audience response, and even extraneous noises). Prejudice—pre-planning a scene instead of negotiating through it with the other performers—is a sure way to fail. Successful collaboration in improv requires that negotiations always remain open.

Collaboration and negotiation

This notion of negotiation will be important for us. When one collaborates explicitly, one keeps negotiations open. When, on the other hand, one characterizes an object, one attempts to close negotiations in advance, limiting them to a few parameters. This is the necessary move for separating oneself as subject from the objects on which one acts. An object characterized by given attributes can appear passive in the face of my action on it; when I have a list of characteristics, I have a Problem laying before me. A rock, for example, to be placed in my garden, seems a pure passive object so long as I consider in the abstract where to put it. I can work with a mental model of the rock that considers only its position and size in three dimensions, relative to the other features of my yard. It seems altogether obvious when thinking in terms of this model that I am the subject, the actor, and the rock the object on which I am working.

But models are never exact (otherwise they would be not models, but duplicates). I want to note the gap between this model and real collaborative doing. Think of an actual rock, in my actual garden. This is not a huge rock, like the one I seem to picture Sisyphus endlessly rolling—nor, for that matter, is it so easy to roll, being decoratively misshapen. It is just heavy enough that lifting it might strain a muscle or two, so I got it to its current position largely by a sort of wrestling. In this process, not only every nuance of the rock's shape came into play, be it as

grip, as obstacle, or as aesthetic feature, but also the soil (uneven, damp, more tightly packed here than there...), the occasional stray root (welcome leverage, strangely effective snare, simple distraction...), the sun (making me sweat, drying the soil...), my gloves, various parts of my body.... In fact, moving the rock could have involved an *unbounded* set of attributes—or, better, it involved me and the rock, in our full concreteness. The point on which I wish to insist here is the unboundedness of the task: as Marcel might point out, I could not have guaranteed beforehand that any list of attributes, characteristics, parameters, or factors would have captured the full range of collaboration. Any model is a thin picture of the world, and makes parts of it look passive; but reality is manifold, dense, thick, and actively involved in our doings. A focus on collaboration can highlight the difference between the two.

So, not only is collaboration always and everywhere, but it is unbounded: it is not reducible to any fixed set of attributes. Because the world is collaborative, it can be compartmentalized—but only unreliably. Another factor may always intrude; negotiations must always remain open. This may certainly be hidden in our daily doings. In chapter 3, I wondered whether some technologies might not make our relations ones of separation or alienation; the hypothesis we can now take up is that what such technologies obscure is, above all, collaboration.

Chapter 5

The Trick: Delegation and Interfaces

I contend that many technologies hide collaboration by presenting the world to us as a set of characteristics, or parameters; equivalently, we delegate negotiations to these devices. In the next chapter, we shall look at how this amounts to a hiding of politics behind the surfaces of our private realms; in this chapter, it is the design of those surfaces that concerns us—the way in which engineering design tends to produce *parametric interfaces*, which alienate us from our collaborations. Let us begin by reviewing and expanding our first chapter's discussion of delegation.

5.1 Agency and Delegation

There is a certain sense of the word "agency" in which an agent is the unique origin or initiator of an action: I decide, and I act.[1] If, in this sense, we wanted to be agents through and through, to be the genuine and original authors of our actions, we would have to escape from collaboration. What would happen if we tried to eliminate collaboration by means of technology? The rough answer given in chapter 1 was this: if we do not wish to negotiate with the world, we can delegate the job to technologies; the artifacts will then handle the world for us; but then both we and the non-human world will appear as passive, and technology as the only actor. So we begin with non-collaborative agency as our goal, call on technologies to hide the collaborative agency of our

[1] Hobbes: "And because *going, speaking,* and the like Voluntary motions, depend alwayes upon a precedent thought of *whither, which way,* and *what*; it is evident, that the Imagination is the first internall beginning of all Voluntary motion." (1985, Part I, chap. VI, p. 118)

world, and end up delegating our agency away to them.

Mastery

We have been speaking in terms of what might result if we seek to be lone agents; the suggestion is that this would lead, paradoxically, to a loss of agency. Now, one may justifiably wonder whether anyone does such a thing as pursue "agency". On the other hand, no doubt we all like to have our own way—and not just to have our own way, but to have it without too much trouble. I am going to refer to the object of this sort of desire as mastery. This should not be confused with the sort of mastery we ascribe to proficient artisans, athletes, and the like. Mastery in the present sense is the ability to pursue one's projects without becoming engaged with the world (including humans, including one's self).[2] It is the ability to pursue one's projects without getting dragged into negotiations. I want to be able to do what I want to do, and not have to worry about intransigent people and objects getting in my way: let me have what I want; never mind the world.

Of course, this is a pipe dream. One inevitably must deal with the world and other humans. But, by making use of delegate technologies—or for that matter, human delegates such as slaves—one can achieve at least the appearance of this kind of mastery. So, both modern technology and ancient slavery can be viewed as a means to mastery, in the sense that they seem to disengage us from parts of the world.

Another way of looking at the notion of mastery is to note that in order to be truly a master, in order to be truly the one who is making the decisions and acting, one must be the only actor; in order to be truly the subject of one's actions, one must be the only subject. If there are any other actors or subjects in any way involved with our projects, then we must give up some of

[2]Tracing the antecedents of this notion of mastery would be a large project in it's own right. Certainly, Hegel looms large in the background: in his terms, action and self-consciousness are dialectical, such that the master has no concrete existence apart from the slave; delegate technologies, he might say, lead us to encounter abstract relations in place of the dialectical ones. Heidegger's response, in *Being and Time*, to Husserl's early work can be seen as a move from an atomic subject to a relational one, for whom "being-in-the-world" is primary. In this respect, Sartre's insistence on radical freedom appears as a step backward: if freedom is found in the radical creativity of the self, then "Hell is—other people!" (1958, p. 47) Both Merleau-Ponty—"il est son corps et son corps est la puissance d'un certain monde" (1945, p. 124)—and Beauvoir move away again from an unencumbered notion of the self, or from mastery toward collaboration. Beauvoir used Hegel to argue, against "Sartre's idea that two freedoms are always in conflict," that "freedom is situated" (Card, 2003, p. 33); this argument in *The Second Sex* marks the beginning, I believe, of the feminist conception of the self as relational. As noted below, other subjects are always an impediment to mastery; a self that is relational—or doing that is collaborative—escapes from this impasse. Certain understandings of autonomy may imply mastery is the present sense; Mackenzie and Stoljar (2000) is a collection dealing with the sort of autonomy that would be compatible with relational theories of selfhood.

our initiative to them; we must set aside our claim to free decision-making power, and instead negotiate some aspects of these activities with others. In practice, we are surrounded by human and non-human others, and as I have suggested, these negotiations must always go on. So, this solipsistic and illusory notion of freedom, i.e. of being absolutely free to simply decide and do as one wants, could only be sustained by means of some sort of delegate interposed between oneself and those things with which one would otherwise have to negotiate.

So, because of the collaborative nature of the world, one must negotiate with things and people; one cannot ignore their reality, or their "aims". To be master is to be able to ignore the aims, the attempts to negotiate, of all others. Delegate technologies can help to impose our will on these others while at the same time silencing their attempts to negotiate. They can do this to varying degrees of breadth and intensity—though never completely. The negotiation still goes on, between the delegate and the object, rather than between myself and the object. But delegates—automated ones, at least—are limited. Demands may come up that they are unable to negotiate: there is always the chance that negotiations between the delegate and the object will fail, and that I myself will be drawn into negotiations. At that point, the object becomes less an object and more a collaborator, and I myself more a collaborator and less a master.

So, one can delegate *some* negotiations to technical delegates, but one cannot know all relevant features of the situation in advance (as I have suggested in chapter 4). The possibility always remains open that something else will need negotiating, that I shall be forced to deal with something else.

Thus, mastery is possible only in some ways, and for some others (human or not). Complete mastery is impossible: to completely master anything, only a full delegate, i.e. a person, could suffice, because only a person is capable—unlike any technology—of negotiating all potential demands. But then, the master depends utterly on the slave, the delegate. And no degree of devotion guarantees in advance that the slave will not make demands in turn. So, to be master, I must come to depend completely on my delegates, and my delegates must be capable themselves of acting in the complete range of ways in which a person could. In practice, I can only imagine, those who wield power "well" do not make the mistake of seeking complete mastery—they serve themselves, it seems to me, by means of constant collaboration and deployment of negotiations

that they manipulate to work in their favour. This is a very different approach from the dictatorial impulse to mastery that wants to have its way without becoming engaged in the world.

Antagonism with the material

Yet another way of looking at this stance is as a kind of antagonism with all that is material. If I don't want to become engaged in the world—if I want to simply decide, and have things go as I have decided they should go—then I am bound to find the material facts of the world oppressive. The world does not always cooperate with my decisions; rather, the world demands that I work with and through it.

This sort of antagonism, we might characterize as a sort of avoidance—as a flight from the world and its vagaries. This sort of antagonism with the material world, or desire to fly from the material to exist in a world that is purely pliable and where things are as soon done as said looks like a sort of disrespect also (the reader may recall my discussion of that topic in chapter 2).

We can get entangled in the world in at least two ways. Practically, we can become entangled as our projects demand us to take account of the details and the demands of human and non-human others; but also, morally, to the extent that we are forced to work with the material world, we bear some responsibility for the outcomes of those workings. This seems to be the idea behind Hephaestus' lament in Sophocles' *Prometheus Bound*, as he unwillingly chains his kinsman Prometheus to the rock: "O much-hated handiwork!"[3] He regrets that he is a labourer, that he works with the material, because it implicates him in Prometheus' punishment.

Delegated Negotiations

We have now looked from three different directions at what is perhaps the same sort of stance or attitude. We have looked at it as the pursuit of lone agency, as the pursuit of mastery, and also as an antagonism with the material (so it is both a sort of pursuit and a sort of avoidance). This stance is one that is realized, I suggest, in the delegation of negotiations: we take this position insofar as we make use of technological delegates (or other subservient delegates such as human slaves). Note, then, that I am not saying only that the deployment of such delegates results from

[3] Line 45.

taking this attitude; nor am I saying only that this attitude results from the deployment of such delegates. Rather, it works both ways: the closing-off of negotiations by means of delegation embodies this sort of stance. Exactly how this happens is what I hope to show in the remainder of this chapter.

We should contrast these delegated negotiations—characteristic of mastery, lone agency, and the flight from the world—with negotiations that are allowed to remain open. I have suggested that, in fact, negotiations always are open: because there is no way to determine in advance the range of possible negotiations, any attempt to bound negotiations beforehand may fail. When a delegate takes over and seems to close off some of our negotiations for us, it is always to some extent illusory: we can try to close negotiations, but in fact they remain open. For this reason, it will appear in chapter 6 that we would do better (all else being equal) to keep negotiations open explicitly—and this would mean choosing technologies that do not function as delegate negotiators. Only by operating without such technological delegates do we ourselves engage fully in our collaborations.

To avoid confusion, it is important to keep this in mind—that the pursuit of mastery, the avoidance of the material through delegation, is always founded on some degree of illusion. The technology, the tool or infrastructure itself, must *appear* as a mere extension of our will; also, that on or with which our delegate acts must appear as passive, as inert, as a mere object—but neither the tool nor the object is really so. The tool or infrastructure I use absorbs and co-responds to any response or reaction of the object, separating me from this, the collaborative aspect of its reality. So, in seeking to eliminate the agency of others, to avoid being drawn into the details of one's collaborations—whether with things or with people—one must rely on the appearance of pliability in the tool and in the object, an appearance which necessarily abstracts from some of the actual characteristics of that object. To the extent that the tool makes this abstraction automatic and unnoticed, it is a dead abstraction in the sense of chapter 2.

5.2 Design Problems and Devices

5.2.1 The device paradigm

Delegation is a kind of abstraction from our collaborative relations. We shall look shortly at how the design of particular technologies causes them to function as delegates. Here, I want to look at a sort of modern Heideggerian, Albert Borgmann. His terminology may help us think about this.

A key notion for Borgmann is that of "device".[4] Borgmann speaks of the "device paradigm", the implication being that the tendency to approach, build, and use things as "devices" is widespread. A device, for Borgmann, is a technology with a consumable aspect, or function, and some machinery that implements it. The consumable aspect of a device, or its commodity, is what it makes available to us. Availability for Borgmann is something of a technical term, and characteristic of the device paradigm: devices make things available, disposable, easily attained, there when we want them, not there when we don't. We have light at the flick of a switch: that system is a device in that we can consume, i.e. obtain, the desired outcome in a reliable and easy way. The other aspect of a device is that it hides from us the mechanism that produces its commodity. In order to use a light switch to turn on a light bulb, we do not have to know how the wires are run in the house, how the electricity is generated, how the light bulb works, etc. We simply operate the device and consume the commodity. This split between commodity and mechanism is the central characteristic of devices and of the device paradigm for Borgmann.

Devices, then, have a great deal in common with what I have been calling delegates—enough that I shall use the terms interchangeably. Delegates make something available while hiding the negotiations that resulted in that availability. While Borgmann has pointed out that mechanism is hidden, and only commodity is presented by a device, I would add that in hiding its machinery, a device also hides the negotiations and the collaborations in which we are involved through it.

[4] see Borgmann (1984), pp. 40ff.

5.2.2 Parametric Design

Devices act to hide from us our collaboration, and close off to some degree—though never completely—our negotiations. I want to look now in more detail at just how devices can accomplish this—how this sort of abstraction can be embodied in a technology.

First, let us recall Marcel's distinction between Problem and Mystery: a Problem is separate from my own being, lies before me as a matter of mere objects; a Mystery, on the other hand, is inseparable from myself (and its context). Collaboration thus implies Mystery: if my actions are bound up with, reciprocal with, and inseparable from the actions of the other things of my world, then my actions on other things are not separable from actions on myself. I cannot act as though I am not in the picture when I do things to the world. I would need to act in this way, as though I myself were put in brackets, in order for the world to appear as a Problem to me. So, another way to identify delegation, or closed negotiation, or abstraction from collaboration, is that it creates the appearance of a Problem out of a Mystery.

We should also recall the notion of characterization. To turn a Mystery into a Problem, one can characterize (some part of) it: reduce it to a list of characteristics, attributes, or parameters, and treat it as though that list of characteristics completely described it. I use "parameter" and "attribute" as synonyms for "characteristic", but "parameter" has particular connotations in engineering design. It tends, first, to suggest a numeric value, a characteristic expressed mathematically; also, it suggests a value that can be set or manipulated, *specified*, when designing an artifact.

Specification

With this in mind, I want to turn to a discussion of engineering design. I want to identify a central aspect of design, and argue that it tends to lead to embodied dead abstractions. It is not my claim that all engineering works this way, or that only engineering works this way. There may well be many areas that are not commonly called engineering, but in which people approach problems in the way I am going to describe—and it may also be common for engineers to approach problems in other ways. However, I think this kind of approach is central enough to engineering that discussing it under this heading is not too misleading.

A central feature of engineering design is that it is parametric. The first step in a typical engineering project is specification: the only loosely-understood problem is here defined in terms of a number of parameters.[5] The "classic engineering approach" is to "define clearly the problem you are trying to solve, and develop standard tools and techniques for solving it."[6] Put another way, "the engineering approach begins with a desire. This is reduced to a problem."[7] The ideal model is of a black box—the thing which is to be designed, the solution to be sought—that has certain inputs, and certain desired outputs (data, loads, torques, speeds, etc.). The specification defines, for any given input, what the output must be, for the design to be considered successful. This kind of parametrization means that a real-world Mystery is reduced to a Marcellian Problem, i.e. a finite, and often very limited, series of characteristics.

Specifications can be satisfied in two ways: one can design a solution, or one can use a ready-made solution that fits the specification. Many design tasks are handled in the latter way, by selecting appropriate components, rather than designing from scratch. The potential for re-usability of a design is thus an important consideration. Even when designing a solution, there is often a general pattern that need only have certain parameters determined. Bridges, for example, tend to be built according to certain classes of structure; once the class is chosen, the design problem is a matter of specifying the parameters of the various components (beams, cables, bolts, etc.).

Subproblems

This specification and parametrization does not only occur at the highest level, the level of the problem to be solved in some engineering project. Rather, a common and very powerful

[5]One engineering textbook begins with the blunt statement, "Major designs start with a specification." (Polak, 1991, p. 1). This is only mostly true. Specifications are subject to negotiation as engineers work (Bucciarelli, 1994, pp. 131–132). Bucciarelli's overall claim is that while engineers tend to see themselves as working in abstract, parametric "object worlds", in fact they often negotiate across the boundaries of these worlds in ways that are as much social as technical. Vincenti (1990, ch. 3) gives an interesting account of how airplane engineers determined, over decades, what kinds of parameters to use in specifying the way an aircraft should handle in flight. What we should take from this is both that specifications are not always impermeable boundaries to the working engineer, and that engineers are willing to spend considerable time and effort to make them more so. So it is more an ideal than a reality to say that what engineers do is design to meet a parametric specification—but it is an ideal that permeates engineering practice and culture sufficiently to support my conclusions.

[6]Ghezzi et al. (1991), p. 2. This is an introductory software engineering textbook, typical, I believe, of introductions to engineering method.

[7]Florman (1996), p. 119. Florman is here quoting James L. Adams.

approach to engineering problem-solving involves the breaking of a specified black box into a series of smaller problems, each of which is specified in turn. This divide-and-conquer approach allows one to take a very large problem, and through a series of divisions, to break it down into a large number of trivial problems. One can thereby create very complex structures without dealing directly with that complexity. "The only way to master the complexity of the project is to separate the different concerns." This "allows us to deal with different individual aspects of a problem, so that we can concentrate on each separately."[8] At each step, one solves one or more fairly simple problems, and the fairly simple problem of how they are to be combined or composed into a solution to a problem at the next level. At every level, this is accomplished by defining each sub-problem as a black box with specified relations between inputs and outputs; in software engineering the sub-problems are often called modules, though "component" is perhaps a more general term. This process of decomposition into parametrically-specified modules or components is a primary means of design, and can be applied to the largest of projects to break them into the smallest of problems.

Notice that it is parametrization—or characterization, as Marcel would call it—that makes sub-problems cleanly separable from each other (in principle, if not in practice). I can use a component designed by someone else without any knowledge of how it manages to meet its specifications; conversely, I can design a module to spec without any knowledge of its eventual context. Engineers favour cleanly-specified designs precisely because of the simplifying, isolating, objectifying, Problem-making effect of characterization.

5.2.3 Interfaces

Problems and subproblems, then, are defined in terms of relevant inputs and outputs. Inputs may have requirements specified, for example, that both inputs to a multiplication module must be real numbers; likewise, specifications may guarantee certain output values for given inputs. The set of input and output parameters, along with the requirements for the input, and the guarantees about the output, together make up what software engineers call an interface. The interface to a module, then, is a set of parameters, requirements, and guarantees beyond which one need not

[8] Ghezzi et al. (1991), p. 47.

look in order to use that module. A module is thus a kind of device in the sense given above: it provides a functionality while hiding the details of its functioning. That is precisely what allows one to solve large problems in terms of small ones without ever having to deal with the complexity of the whole.

I want to generalize somewhat this notion of interface. Any tool or infrastructure that we use—whether directly, i.e. at the top level, as a solution to a problem, or indirectly, as a sub-component of an engineering problem—has an interface. But here, the interfaces can be of two kinds. There are parametric interfaces: those with a limited set of operations and a limited set of results that may result from those operations, just like a specified module in a software design. And, there are non-parametric interfaces: these are such that the ways in which one can interact with the technology are essentially unbounded. For example, computers have parametric interfaces, though fairly complicated ones. The kinds of input are limited to things like key-presses of one of some limited number of keys, and the clicking of mouse buttons along with the movement of the mouse. All of our interaction with the computer works through those interfaces. When we use a piece of software, there is a further interface defined in terms of those basic operations, such that the computer may display on the screen a number of menus or other "widgets" (the technical term) that one can click on, drag, or otherwise manipulate with keystrokes and mouse clicks and movements—so this is a parametric interface. Something like a snow shovel, on the other hand, has a non-parametric interface. We can accomplish certain things with the shovel; it makes certain things easier; it is certainly a technology, and different than working with our bare hands. But, the way in which we use a shovel is relatively open: I can hold it at different angles, and there is an infinite range of modulations of my use of it, in terms of different angles, the force with which I move it; I can use a shovel to lift snow, or to push snow, or to break ice by banging it up and down; I can easily invent other, though fairly closely related uses of it. In all of these uses, the blade of the shovel tends to function as the part that interacts with the snow, ice, or ground, while the shaft and handle are what I grasp. But how exactly I grasp it, and what sort of movement I use to bring it into contact with the snow or the ground are left very open. One can probably identify degrees of parametrization between these sorts of extremes.

A simpler example of a parametric interface is the light-switch. The switch is either on or off;

those are the choices; there is nothing more; its behaviour is perfectly well-defined. A switch with a slider is still parametric, though the parameters have been expanded. Now, I have the option of setting the switch to any of a range of possible positions; instead of a choice between on and off, I have a choice of positions within a continuum. That is still a single, albeit continuous, parameter. Unlike the shovel, the operation of the light-switch inherently disallows other means of interaction, and abstracts from the details of our operation.

5.2.4 Problematization

The crucial feature of engineering design by means of specification, parametrization, or characterization, is *not* just that from the designer's point of view, it turns a Mystery into a Problem. Indeed, the abstraction may or may not remain alive from the working engineer's point of view; sometimes (though perhaps not often enough) it is only natural to think beyond the boundaries of the design problem. Rather, in addition, the solution to the problem tends to have a parametric interface. Because the engineer is asked to solve a problem specified in terms of parameters, the resulting solution tends to be a device with a parametric interface, that allows the specified inputs and produces the specified outputs. What tends to happen in this kind of design, then, is that the engineer's problem becomes the consumer's or user's Problem: because I must operate the device by means of its parametric interface, I must operate as though the world were in fact just as the engineer conceived it when working on his model of the problem.

I do not think that this is a necessary outcome of parametric design, but there are at least three reasons why it is a likely one. First, the methodology of design involves Problems: it involves seeing the artifact under design as isolated from its context by the specification. Engineers who learn to see their work in these (very effective) terms may be likely to produce solutions that match this vision. Second, "setting impermeable interfaces with potential users is one way in which engineers try to extend their control over the functioning of their productions out into the marketplace."[9] If the interface is permeable, if it encourages the user to open the black box of the device, then users may do something the engineer did not intend—a parametric interface helps protect the mechanism from its environment. Third, much of the design task (excluding

[9]Bucciarelli (1994), p. 124.

original invention) involves selecting from existing components and technologies to match the problem specification; in making this selection, designers may find it easiest to choose parametric devices, since the problem is then reduced to one of matching parameters—thus there is a sort of natural selection process that favours the highly modular, re-useable technologies that parametric interfaces provide. In general, the more hermetic the interface, the easier the design.

Bruno Latour talks about "pasteurization".[10] He points out that Louis Pasteur's findings about vaccination did not apply in most of the world when they were discovered: they only apply in conditions closely enough approximating those of Pasteur's laboratory. The laboratory is a highly controlled setting in which many possible factors are prevented from interfering with the workings of the vaccination. The farms of Pasteur's day, on the other hand, where he wanted to apply his anthrax vaccine, were dirty, unbounded, unpredictable environments in which any number of things might interfere with the hoped-for working of the vaccine. What that meant was that for Pasteur's predictions about vaccines to be true on all farms, all farms had to become like Pasteur's lab; this is what Latour calls "pasteurization". In parallel, I shall call the result of engineering designs that I have just mentioned "problematization". The world, when populated with solutions to specified engineering problems comes to appear more and more like those Problems.

By characterizing a Mystery, or by specifying an engineering problem, we create an abstraction; we can then work on that abstraction in order to create a solution to the problem. That solution, when produced, distributed, consumed, used in the world becomes a device in Borgmann's sense. And what these devices do is require us to operate by means of their parametric interface. This in turn means that we operate as though the Mystery that originally gave rise to the specification does not exist. We operate as though the abstraction, the parametric characterization of the problem, were the whole story. Again, in operating in such a way, we act as though negotiations have been closed. We negotiate with the device in a very limited way through its interface, according to a certain number of parameters; the device, if functioning correctly, then negotiates with the world on our behalf. Problematization, then, results in the hiding of negotiations, and the dead abstraction from collaboration: it results in delegate technologies.

[10]Latour (1983).

5.2.5 How interfaces abstract

Interfaces can affect how we do things in a number of ways. I want to look now at some of the ways interfaces can cause us to abstract systematically, while we are using them, from the details of the collaborations in which we are engaged.

First, there is the issue of attention. There is a tendency to be absorbed in operating an interface; this leads us to forget what lies behind. The degree to which this is true will depend on the nature of the interface and our interest in it. In general, one could make the effort to pay attention to factors which are not included in the interface. So, this effect alone is only a tendency: some technologies tend to absorb and focus our attention only on a limited set of parameters.

Another way in which a technology may affect us is by *demanding* such attention. It may be that one simply cannot safely or effectively operate the device while keeping in mind larger or background issues. If the operation of an interface is sufficiently demanding of our mental resources, then we cannot get past the interface because we cannot afford to spend the mental energy on keeping negotiations open.

Still a third way that interfaces can encourage abstraction from collaborative relations is by allowing us to make decisions based only on the interface. This is only an allowance I am talking about at this point. The fact is that we *can* operate a light-switch without thinking about the electricity that causes the light to come on. In using such a device, we are not constrained to deal with our full reality; thus, it makes avoidance of certain material conditions possible; it facilitates the sort of antagonism with the material that I discussed above.

With technologies that do not act as delegates, on the other hand, one cannot avoid the concrete collaborations of the world. In using a shovel, it seems to me that I cannot avoid the details of the snow and the ice as I work with it. Certainly, these details are mediated through the shovel—that is what makes digging with a shovel different than digging with my hands—but any number of factors might come into play. Using a snow-blower on the other hand, one may be at liberty to ignore more of these details.

Finally, interfaces can affect us by requiring certain kinds of operations. This, it seems to me, is the most unavoidable, and therefore perhaps the most crucial way in which parametric interfaces lead to abstraction. When doing something with an interface, I need to provide my

input in the form that the interface accepts. If, for example, I am working with a programmable thermostat, I must convert whatever thoughts on warmth, energy efficiency, etc., I might have into terms of times and temperatures, so that I can operate the thermostat's interface.[11] Parametric interfaces, then, have the characteristic that whatever one's intention—whatever attitude one would like to take—one must operate in certain ways. That means that one must classify the world, at least for a moment, in the same way that whoever set the specification for the device classified the world at the time—and this means that one must treat the world as a Problem rather than as a Mystery.

One might imagine that the more such interfaces are present in one's environment, the more time one will spend treating the world as a Problem, as properly characterized by a set of parameters—the more one will allow it to be hidden behind one's technological delegates.

Examples

Let us consider three common types of technology: the Internet, automobile transportation, and the climate-controlled home. I shall mention one difficulty in applying these notions to particular technologies: few tools at present exist independently of their infrastructures. So, to consider a microwave, for example, one must also consider the electrical network that lies behind it. In this sense, perhaps the most significant feature of a microwave is no different from that of an electric stove or oven: the interface is not specified in terms of the energy consumption, the environmental impacts, the labour relations, the political questions that are implied by the vast network of transmission and generation lying behind both the stove and the microwave.

The "net" is an interesting case because of the evident flexibility and freedom of its interface. One might think that the net is no more parametric than literature: even though one's communications leave out some of the channels of face-to-face meetings, one can express oneself in all the ways human language allows (and supplement this with sounds, and still and moving images). As a communications medium, the net is quite boundless. At a certain level this is true, and makes the net a powerful tool for connection—for sub-cultures, for amateurs of all sorts, for grass-roots

[11] If one will not or cannot work on the thermostat's terms, one cannot effectively use it. This may in fact be the case with many programmable thermostats: a local news programme recently claimed that 70% of users simply leave their thermostats on "hold"—effectively treating a programmable thermostat as a conventional one.

politics, etc. But we should not overlook the parametrization and abstraction that is the very heart of this sort of technology. It is precisely because of a series of "abstraction layers" (a technical term in software engineering) that the medium is so flexible. At the bottom of these layers lies hardware: the servers and routers that make the net work. These consume electricity (quite a lot, in fact), are located in buildings in physical places, and are kept in operation by people doing a variety of jobs. This physical and human infrastructure is what the net abstracts from, with great elegance, so that one can engage in such a wide range of communicative activities. From the user's point of view, one has some "bandwidth", and some "storage", an "account" or two; these are all defined in terms of certain parameters (megabytes, user-names, hours of use, ...). We are seldom aware of what lies behind these things: there are others, human and not, lying like a shadow behind the abstract interface that guarantees the Internet's flexibility.

The net is an instance of a class of abstractions: the independence of content from medium. In using telephones, televisions, computers, radios, etc., we can work with a basically unbounded range of content—there are no obvious parameters at this level. But the medium itself has a parametric interface that provides the content; the mechanism is hidden behind it. The extent to which this parametrization is effective varies: AM radio is not so far removed from the problems of broadcasting (one notices the effects of the weather, for example), as is cable television. Generally, where content seems to be free of its medium, there is an interface hiding a large infrastructure.

Applying the notion of parametric interface is easier in some realms than in others. Computers, and digital equipment in general, happen to be the easiest. It is a little trickier when we come to largely mechanical devices such as automobiles. On the one hand, a properly-functioning automobile engine does provide power without involving the driver too much in its internals. On the other hand, it does not seem true to experience to say that driving is a matter of choosing gear, steering wheel position, and gas flow: these parameters do not alone make up the interface a driver experiences. One tends to be aware of sounds, of bumps, of wind pushing the vehicle, and of course of roads and other automobiles. What we seem to have in the automobile transportation system is a partial parametrization: engine performance is largely parametrized while maneuvering is not.

I say "automobile transportation system" instead of "the automobile" because the latter gives a misleading impression: that cars might be cars on their own, without refineries, gas stations, and road maintenance. No typical car would go anywhere—would be an "automobile", self-moving—without these. In fact the gasoline pump seems to be a rather significant instance of parametrization: type of fuel, pump or stop, how many litres—and in the car, a gauge for fullness of tank; we now even have digital interfaces on the pumps for making payment. The attendant could in principle vanish at this point; the refinery was never clearly visible. At the time of writing, spikes in the price of gasoline have caused many people to look for the first time at the economics and politics of the gasoline wholesale market.

Could the parametric interface between engine and driver be made more permeable? It seems to me that designers of gas-electric hybrid vehicles have taken a step in this direction. Hybrids I have been in have a little display representing the energy flows between electric engine, gas engine, and battery. While this animated diagram is certainly an abstraction, a mere model of the engine, it does seem to invite the driver into the mechanism in a way that most gas-powered cars do not. Now, I am not sure what the reason was for including the display—whether it was considered important to operating the vehicle, or whether it was seen as a selling point for consumers who would likely be proud to display such a gizmo. The latter possibility is interesting for what it suggests: the romance of a technology may entice us to engage with the machinery; if we simply find the device useful, we may be inclined to prefer the cleanly parametrized interface.

Finally, let us consider the private houses of middle-class North America.[12] These homes have become more and more parametric over time, with water, lighting, and temperature one by one becoming commodities procured by simple operations at parametric interfaces. Air conditioning and heating are an interesting case, particularly because there are alternative approaches that are non-parametric without looking like a technological step "backwards". The typical "climate control" system is thoroughly parametric: thermostats, furnaces, and air conditioners let us adjust our home's climate according to a few simple parameters; the resources and infrastructure involved are elegantly hidden.

Now, one step toward bringing such things into the open would be to add more parame-

[12]Feenberg (1999) emphasizes that the house is basically a technical object—in Le Corbusier's phrase, a "machine for living" (p. xi).

ters. An interface with more parameters is still parametric, still cuts us off from some possible negotiations—but in practice it may bring us closer to a non-parametric interaction. In some areas, electrical meters now display load—so one can see how much energy one's home is consuming—and calculate charges based on demand: the cost is higher at times of high demand. Having this information displayed may engage households more with the issues behind electrical supply. One could do something similar for fuel usage by a furnace.

There are, though, other (or supplemental) approaches to comfortable homes than furnaces and air conditioners. Passive solar heating is an up-to-date design concept, but it seems to me that it draws the sun, the weather, the environment generally more into explicit negotiation.[13] Similarly, one can achieve a great deal of comfort in hot weather with fans and ventilation—and doing so breaks down the parametric interface between home temperature and external conditions. Passive heating and cooling techniques (which are passive only in the sense that they are not driven by a black-boxed energy source) range, I believe, from archaic to state-of-the-art, without requiring a parametric interface.

5.2.6 Malfunction

I have been discussing parametric interfaces as though they always work—as though when the engineer solves the problem as specified, the solution will then allow us to act as though that were the whole story. But, as we know all too well, many technological devices do not work reliably. If we look around, we can find devices that really do not work as we would like much of the time—computers are a key example. There are devices that mostly work, but sometimes behave in unexpected ways—our electrical system is this way, batteries, cars seem to be this way (though they require more repairs than many of our devices), disposable pens are this way, roads, plumbing. We can also find devices that work almost without exception, that seem to be very effective solutions to the problems they aim to solve: microwaves and electric stoves seem to be this way, as do quill pens, though these, of course, are much less parametric than disposable ones: one must oneself take care of the ink, and by the same token one need not (I imagine) be so

[13] Passive solar refers to solar heating accomplished by architectural means: carefully oriented windows, thermal masses, etc. Active solar, on the other hand, refers to the use of solar panels to generate electricity, which is in turn used for heating, lighting, etc.

concerned with the pen leaking or running out of ink.

Interestingly, the widespread malfunctions that our technologies undergo often seem to be related to parametrization: many instances of failing to work seem to be precisely failures to problematize: the interface fails to keep out other realities. Although the engineer designed a solution to a given specification, there are facts of the world that the specification does not consider; and though the resulting device allows us, much of the time, to act as though those factors are not present, sometimes the device will fail precisely because of one of those factors. Then, we will be forced to deal with the failure and what caused it: we will be forced back into negotiation.

In my experience, the most the unreliable modern technology is the computer, specifically computer software—and yet it is in software design precisely that parametrization is most widely and strictly applied. We should wonder why so-called "bugs" are so ubiquitous.[14] Why is it that programmers make so many mistakes, precisely in an environment that is relatively free from material constraints and relatively open to effective parametrization?

One problem in computer programming is that modules may be affected by their environment in ways that are unspecified. This can happen both while the code is being generated (at "compile-time") and while the computer is executing a program (at "run-time"). In both cases, things can happen to a module that were unforeseen and could not easily have been included in the specification.

Another, and perhaps more general explanation for the ubiquity of bugs is the following: the engineered interface is an abstraction from the concrete sequence of uses of or calls to the module that the programmer can imagine. The specification makes requirements of input, and make guarantees about output, but within these there are considerable latitude. Because the specification abstracts from these concrete series of calls, there is a temptation on the part of the programmer to make assumptions about the predictability of unspecified, and particularly, state-dependent behaviour. A given series of calls might produce results that are predictable and a result of that series as opposed to some other. The problem that I am suggesting, then, is that the module boundary appears hermetic, so the programmer tends to exaggerate her freedom within

[14]The term, it is said, originally referred literally to insects causing an electrical failure somewhere in the hulking early computers—a facet of their operation lying quite outside the formalized logic of programming.

the module. This may lead the programmer to write code that does not match the specification; or, to write code that matches a more precise specification, on which that programmer or another might then come to rely in another module.

We can hypothesize, and this might be true in general, not just for software design, that the smaller the interface—the more closely defined, with fewer parameters—the more designs tend to create devices with side-effects. The more the outside reality appears removed, the less we feel a need to consider it, and so the more likely we are to make bad assumptions about it (this hypothesis will return in the next chapter as the "proliferation of hybrids").

The notion of "anti-program" (see chapter 1) is related. Actor Network Theory (ANT), recall, understands technologies in terms of networks of actors—human and non-human. What engineers do, on this view, is bring together the various components of these networks, and cause them to take up certain relationships with each other. Callon points out that networks are constructed in part by simplifying their members. This simplification, however—which I take to be akin to the kind of abstraction that I've been discussing, resulting from problem specification—might fail, leading to behaviour that in ANT terms is called an "anti-program". These anti-programs can cause unpredictable behaviour in certain parts of a network; they can lead to failure where predictable behaviour is assumed. We can view this not just as a source of error, but also as a source of political possibilities, a point to which I shall come again in the next chapter.

Let us round out our discussion of technical malfunction with a quick summary of the kinds of reasons behind malfunctions. First of all, there is strict design error: the device produced does not behave in a way that matches its specification. If, for example, our multiplication module was written to always return the number zero, this would be a design error: we did not program according to the specification. Another kind of malfunction is due to wear and tear: a device might be designed and manufactured properly, but over time parts of it might cease to function as designed; more critically, this wearing might happen more quickly than predicted. Somewhat related are manufacturing defects, where, although the design might be strictly speaking good, the manufacturing process fails, or at least sometimes fails, to produce a part that behaves as specified. This might happen because a component, as specified, is not available, and so another

is substituted.[15]

Another kind of malfunction results from the abstract nature of the engineering problem, and is a sort of revenge of the world for being partly left out of consideration—a "return of the repressed". Here, there are a number of possibilities. One is a side-effect that is not itself a malfunction. We are most familiar with side-effects of medication: it may properly treat the symptom it was designed to treat, but at the same time cause some other, unintended effect. Side-effects might be either good or bad. Environmental problems can also be thought of as side-effects of the various parametrized tools and infrastructures we use. A second possibility is a side-effect that happens to interfere with the function of the device. For example, if a side-effect, surprisingly, of my new DVD-burner were to overload my circuits and make my power go out, then the burner would fail to function, not because the design failed to meet the specifications, but because the side-effect stopped it from working. A third possibility would be a side-effect that interferes not with the specified behaviour of a device, but with its broader purpose. Medical side-effects are sometimes this way: I may take a pill which eliminates an undesirable symptom, but that causes another that is so severe as to render me less healthy than I was before—and, since the purpose of taking the pill was to make me healthier, this amounts to a malfunction. Finally, there are outright failures of separation, or of problematization: the device, within a limited range of situations, functions as specified, but because the world does not always behave as the engineer's model assumed, because negotiations in fact remain open, sometimes the device fails in its negotiations—fails in its attempt to screen me from the collaborations it is taking care of for me, and so fails to behave as expected and to produce the outcome I had desired.

5.3 The Trick

Let us now return to and sum up the question of how a parametric interface leads to the delegation of negotiating powers to the device. What we have here is a sort of trick. The abstract interface provides some sort of commodity, as Borgmann points out. There is something we want

[15] Dym (1994) gives an example: "The collapse of Kansas City's Hyatt Regency Hotel occurred because a contractor, unable to procure threaded rods sufficiently long to suspend a second-floor walkway from a roof truss, hung it instead from a fourth-floor walkway, using shorter rods." (p. 16)

to achieve or have, and the device offers it: here it is; I can do this for you. So, we choose to delegate to the device the procurement of that commodity, the completion of that particular task. So far, this is a perfectly sensible thing to do. However, because the world does not stop within the bounded negotiation presented by the interface, we inadvertently delegate *more* to the device than we intend. All of our collaboration with those objects manipulated on our behalf by the device, the device now takes over for us. In the case of a light-switch, we want it to turn on the light when we flip it, and it does; but it also causes a current to flow, which causes a draw on transmission lines and generating facilities across a large area, which in turn has impacts on energy policy, on commercial profits, on various jobs that other people need to do. So, the abstract interface offers itself as a delegate of limited scope, but instead acts as a delegate in a broad scope: we are tricked into delegating to the device all of our negotiations in some area. Of course, it is possible that we might quite consciously delegate this whole range of negotiations, that we might want to ignore these things; it is surely more common, though, that it is only the procurement of the commodity we mean to delegate, not the rest—and in this case we are tricked.

Let us recall here what I have said about open as opposed to delegated negotiation. In fact, I have suggested, the range of negotiations can never be determined or prescribed in advance: there is always the possibility of other factors demanding attention. And so negotiation is in fact always open. This is true because our relations with the world are collaborative ones. By delegating our negotiations, we appear to close them off, but in fact those negotiations still go on. The difference is simply that we have given up our direct involvement in them. The interface functions as a dead abstraction from our collaborations.

This sort of abstraction, or hiding of negotiations by the interface, should be contrasted with the kind of separation that results when we explicitly and intentionally negotiate it. For example, a tent separates me from various aspects of my environment. It can separate me from drafts, from wind, from rain, and also from annoying and biting insects, and from small animals that might be otherwise interested in the contents of my tent. So the tent separates me from certain aspects of my world—but these are all aspects of the world that I *want* to be separated from, and it is precisely for this reason that I erect the tent in the first place. So, to that extent at least, the tent does not trick me into delegating my negotiating power to it. Rather, the tent is part of my

ongoing negotiations with the environment in which I am camping. Now, the tent does have some side-effects: it also screens out my view of the stars, to a limited degree deadens the sounds of the night, separates me from some of the experience of being out in the wilderness.[16] To that extent, the tent may amount to a sort of trick. But because this happens with a fairly limited range of things, and my use of the tent is fairly non-parametric—it is not a way of hiding a large number of negotiations, but rather a way of engaging in them—the tent, relative, for example, to a mobile home, leaves me very in contact with the natural world, and able both to experience and work with it quite closely. Similar remarks apply to a home heated by passive solar energy; in fact the two are rather similar in that they are erected with attention to climatic details, and the benefits are enjoyed without the hidden involvement of gas-lines, energy ministers, and the like.

It may not be quite right that my *wanting* to delegate or not is the issue. In the case of the tent, but not the light-switch, I tend to be aware of the range of my decision. But, as we noted in chapter 2, we cannot hope to be aware of everything that is relevant to our doings. We must abstract to get through the day. The normative distinction that concerns me here is between live and dead abstractions: does the interface tend to draw me away from the concrete or towards it? The tent, unlike the switch, does not tend to draw me away from the networks behind it.

In reducing the range of our operations to a certain set of attributes, technologies trick us into delegating a broad set of negotiations to them. The more this happens, the more simplified and, as I suggested above, masterful our relations with the world become. In the extreme, we end up with a sort of "point-and-click" world: all we have to do is push the right buttons, flip the right switches, and everything we want will happen. Everything we want, that is, but also whatever might be hidden from us: all of those ongoing negotiations, including their possible side-effects, for which we have delegated consideration.

5.4 Romanticism Revisited

In conclusion, I want to recall here the issues of romanticism and of authenticity that I raised in the first chapter. One romantic position on technology, I suggested, is that technologies are

[16]Fletcher (1996), pp. 285ff. This technical manual for hikers, incidentally, is permeated with rather thoughtful observations on the relations of humans, wilderness, and technology.

somehow inauthentic, or lead us to be or behave in inauthentic ways. I think that we can see at this point that, in a quite precise way, some technologies are in fact inauthentic.

The typical argument against the notion of technological inauthenticity runs something like this: technologies change the world—it is a different world with a certain technology in it than without; what we do is different, and what we experience is different—but, so the argument runs, the new reality is just as real as the old one: we have changed the world, but it is still the world, the real world. So, it makes no sense to say that we are somehow less in touch with things, or in a less authentic relation with reality than we would be without these technologies.

But this does not follow. We are doing different things; the world is different; this may certainly mean that we are less in touch with some significant things about the world. So, yes, reality is no less real—it is still reality—but there may be parts of reality to which we now pay less attention. There may be parts of reality that we affect without realizing it, or that affect us without appearing to do so. I think everyone can agree that ignoring traffic while walking out on a road is not a sensible thing to do; one ought to pay attention to such realities. Similarly but more broadly, if my actions have political consequences, or if in general there are injustices or dangers in the world, to me or to my loved ones, or indeed to others who may have some claim on my conscience, then to ignore such things is to ignore important facts that ought to influence how I make decisions, act, and go about my day. So to ignore such things would be to lead an inauthentic life, a life, as Marcel puts it, that is a sort of lie, that constantly turns away from some of its own crucial data. It does seem to be that how in touch with the world I am depends on my engagements in my projects and practices; but these projects and practices in their very nature may be affected by the technologies I use—and they may be affected such that I am no longer in contact through them with the very kinds of data I have just mentioned, with facts about reality that ought to form a key part of my understanding of it. This is one sense in which some technologies may be inauthentic.

There is another sense also: a sense in which the world is less real if technologies allow us to deal largely with pliable entities, so that our projects involve a high degree of disposability.[17] Such a world is a little bit more like a dream than a world: if the material and social world has so

[17]Borgmann's term; see the above discussion on the device paradigm.

little effect on my projects that it might as well not be there, then in this sense I experience it as less real.[18]

So in these two senses—in the sense of disengagement, or disposability that Borgmann talks about, and also in the sense that crucial features of our negotiations might be taken away and hidden from us—in these senses, some technologies, and particularly those that problematize, are inauthentic.

[18]Borgmann identifies disposability and discontinuity as the important difference between a virtual experience (running in a simulated wilderness) and a real one Borgmann (1992, pp. 95–96).

Chapter 6

Abstraction and Power

It is difficult for an individual to make a difference in our world; one often runs across this complaint. It is sometimes put in terms of the difficulty of connecting knowledge to action: we know the environmental dangers of our lifestyles, and yet we don't change (enough)—why is it so difficult? Sometimes this is linked to a concern with attitude. The question is, have we failed to change our attitude in the necessary way? The difficulty of individual meaningful action is sometimes put in terms of agency. Andrew Feenberg puts it this way: "The fundamental problem of democracy today is quite simply the survival of agency in this increasingly technocratic universe."[1] For Feenberg, the issue is not so much that we know but fail to act, as that we cannot act, or cannot find channels for meaningful action. I want to suggest in this chapter that the abstraction we can trace to many day-to-day technologies contributes to this problem, and that by changing our ways of working, and changing the technologies we work with, we should be able to open up more opportunities for meaningful action for ourselves as individuals or small groups.

6.1 Attitude

First, I want to set aside the attitude question. Many thinkers on social, environmental, and technological problems point to attitudes as what must be changed in the end. This is a sort of idealism, I suppose, and might be contrasted with a sort of materialism that would dismiss

[1] Feenberg (1999), p. 101.

attitudes as irrelevant—what matters is the material state of things, perhaps the economic or power apparatus that is in place. I hope to offer a middle course between these two extremes: perhaps we can open up channels of meaningful action by changing the technologies we use.

Let us first consider some examples of attitude-centred writing. Ecofeminism, despite its material and political concerns, often follows this vein. As Karen Warren puts it, "many ecofeminists and ecological feminist philosophers have argued that, *ultimately*, historical and causal links between the dominations of women and nature are located in conceptual structures of domination and in the way women and nature have been conceptualized."[2] Warren is here attributing a claim to her fellow ecofeminists, and the claim is not just that conceptual structures are important, but that they are the ultimate location, the root, of domination. There are two ways to read this. On one reading, "conceptual structures" are particular to individuals: they are personal ontologies, world-views, or what I refer to most generally as *attitudes*. On the other reading, "conceptual structures" are social and institutional. Susan Griffin, for example, appears in places to see attitude as the fundamental problem. She writes that, "what remains unchanged is an attitude, a psychological orientation to existence."[3] Here, she seems to take the position I reject: that if we were to change our attitude, the rest would follow. Later, though, she writes that to change a "habit of mind", we must change the "social architecture of our thought," including "institutions, social systems, economies, and governments."[4] Technologies would seem to fit fairly comfortably in her list, perhaps even fall under institutions and social systems. This is a more complex notion of what it would be to change a conceptual structure, and is already a move away from the claim that if we change our attitude the rest will follow. It is a recognition that attitude is one facet of a kind of change that must be undertaken as a whole. A difficulty with that view of things—that to change anything, be it attitude, institutions, or some other facet of the whole, we have to change them all at once—is that the problem seems incredibly daunting: one might wonder how an individual could begin. In any case, on the institutional reading, I do not object to placing conceptual structures at the root of domination. It is on the personal reading that the

[2]Warren (1996), p. xi (emphasis added).

[3]Griffin (1995), p. 46. Notice that while she refers to a "European psyche", there is no indication of *whose* attitude is unchanged: the sentence is effectively in the passive voice.

[4]ibid., p. 154.

picture is significantly incomplete; this is the approach I want to avoid.

Warren herself seems to take this line when she describes two "very different ways to climb a mountain.... If one climbs with 'arrogant perception,' with an attitude of 'conquer and control,' one keeps intact the very sorts of thinking that characterize... an oppressive conceptual framework... also... a patriarchal conceptual framework."[5] The alternative is to climb the rock "with a loving eye... perceiving it, responding to it, noticing it, attending to it."[6] This contrast, of course, is rather like that between abstraction and attention I discussed in chapter 2, and I too favour the "loving eye". But is this just a matter of attitude, of state of mind or perception? It appears so in Warren's description, based on a narrative of her own climbing experiences. But who and what was involved in her climbing? The most common rock-climbing practice is "top-roping", in which the climber wears a safety harness with a rope leading up to the top of the climb; a "belayer"—a person—uses the rope and other gear to take up slack as the climber climbs, ensuring that if a fall happens, it is only a couple of feet and there is little risk of injury. Warren mentions her belayer—only to report that this other person is out of sight[7]—so it seems that she was indeed top-roping. So she was in no danger of falling: her actions were constantly backed up by artifacts (rope, harness, etc.) and at least one other person (the belayer). She reports that she and the rock "felt" like "silent conversational partners in a longstanding friendship", and that she had "come to care about this cliff."[8] Her experience sounds to me wonderful and important—but regardless of her experience, her communion with the rock was mediated by hidden others, human and non-human. A focus on experience and attitude alone would overlook this.

Albert Borgmann also seems to take attitude as the fundamental solution. He desires "neither the modification nor the rejection of the technological paradigm but the recognition and restraint of the pattern of technology so as to give focal concerns a central place in our lives."[9] A focal concern is a sort of non-technological practice like running, hiking, or cooking a festive meal. Unlike practices within the device paradigm, a focal concern makes no sharp distinction between

[5]Warren (1996), p. 29.
[6]ibid., p. 28–29.
[7]ibid., p. 26.
[8]ibid., p. 26.
[9]Borgmann (1984), p. 211.

means and ends, between commodity and machinery.[10] But Borgmann allows that technological devices can help us with our focal concerns—so how do we keep these concerns from falling into the paradigm of technology? His answer is this: "Practically, a focal practice comes into being through resoluteness."[11] As I understand it, resoluteness is an attitude of commitment to a practice, a being-resolved to give the practice a central and significant place in one's life—say, committing to regular hiking trips with the intent to fully attend to the interplay of body and wilderness. I cannot find in Borgmann any necessary difference between focal practices and technological ones but this attitude of determination. But how, we might wonder, can one tell if one is sufficiently resolute? If I use a piece of technology to help with, say, hiking, how can I be sure that I am still hiking in a focal way? To the best of my understanding, Borgmann does not give an explicit answer. To be fair, Borgmann might want to say that only certain practices could be focal, and these involve a different way of doing things, not just an attitude of resolute non-instrumentality. This does seem to fit with his overall approach, and with the notion of technological device (see chapter 5). The theoretical means are present in Borgmann's work to go beyond attitude—but, so far as I have found, he does not. My position is quite compatible with most of his theory; this makes it only more noteworthy that he, too, seems to end up with the "attitude question".

I think that attitude is not the problem. Though I don't want to rule out that attitude could be *a* problem, I want to move our focus away from it, for two reasons.

First, consider Kierkegaard's "Knight of Faith".[12] Kierkegaard's ideal religious man might, he tells us, look exactly like an ordinary middle-class city-dweller, and might in fact behave exactly like one, too. The difference is the reason for the things the Knight does: he is always acting in direct relation to the Absolute (God). It is, in some sense, a difference purely of attitude. We should ask, then: could we all change our attitudes, our ontologies, etc., and yet continue to do exactly the same things? This would not be very satisfying, particularly given that some of the issues giving rise to the call for a change in attitude are material ones, such as ecological dangers.

Perhaps invisible differences can be important, but what we can usefully say about them is

[10]ibid., p. 202.
[11]ibid., p. 210.
[12]Kierkegaard (1985), pp. 67ff.

limited. If attitude can be independent of outward signs, questions about it can become fruitless and baffling. We are led into questions about whether or not I had the right attitude when I did such-and-such (e.g., climbed the cliff, strapped on my high-tech backpack), and that can be a subtle and mysterious question, rather akin to the question of whether the Knight of Faith had an absolute connection with the Absolute when he did such-and-such. I think we need to look beyond attitudes in order to move forward.

Second, I want to recall the discussion in chapter 3 of media, i.e., of technology as mediating relations, and also the more general idea outlined there of determined practices. A determined practice, recall, is a practice that cannot be successfully carried out except in certain prescribed ways. The latitude one has within a practice may be prescribed by social institutions or by the technology, the tools, the infrastructure that one uses when carrying out that practice. I suggested in chapter 3 that many of our everyday activities and practices are quite closely controlled by the tools and infrastructures that we do them with and through; in chapter 5 we saw in more detail how this might happen. If that is the case, our attitude to doing those activities is not going to matter: we can have whatever attitude we like, but the significant operations are determined by the technologies we use. We can only use those technologies in a certain way, and so approaching them with a more enlightened attitude (loving the microwave instead of using it, let us say) may have benefits of some sort, but cannot change significant aspects of the way we operate with microwaves or other technologies. So, for these reasons, I want to move away from the question of attitude.

6.2 Responsibility

Now I want to discuss the question of responsibility, if only to set it, too, aside. It may seem that we ought to take responsibility for the negative results that our various daily activities might have. For example, to the extent that my daily routine is detrimental to the health of ecosystems, I ought to change that routine. And, certainly, one can do so. However, discussion of responsibility tends to lead to the wrong conclusion: that individuals who do not change are wholly to blame for the consequences. There must be some truth to this, but I think that to focus on the question

of why so many of us fail to take responsibility is the wrong move politically, for a number of reasons.

Let us consider taking a shower, a long one. It is easy to take a long shower, to enjoy it, to be in the habit of taking long showers. Shortening the length of time one spends in the shower will reduce one's energy and water usage, and reduce the greenhouse gas emissions associated with one's showering; it will probably get one just as clean, but without as much environmental impact. So, the question is, why, particularly given that I can see my monthly gas usage on my bill, have I still at times allowed my showers to run long, day after day? Now, no doubt, a sort of weakness of will was involved. The showers were pleasant, and the immediate pleasantness of the shower seemed to outweigh the more distant resource and pollution costs. It is difficult, when in the warm comfort of the shower, to tear oneself away from it for the sake of slowing the depletion of some distant stockpile, or reducing the amount of pollution one is causing.

But it is important to notice here that it is not simply a matter of one impulse outweighing another. The fact is that I get *all* the pleasure from the shower, but the costs are very widely distributed. So, the cost to me of the resource depletion and pollution that I cause is minor, in fact practically negligible; the pleasure is significant. Certainly, the aggregate cost of everyone taking long showers as opposed to short ones is significant, but for me, the cost to me of my choice is minor.

What is happening here is a sort of externalization: the pollution and resource costs are what an economist would call externalities; i.e. they are costs borne by people—and in this case, almost entirely by people—who are not involved in the transaction. My buying and burning of fuel impacts many people who were not part of the agreement. As is often the case with externalities, the effect is to let me experience a benefit while others experience the cost. The reverse happens if I try to take shorter showers. All of the lost pleasure is my own; I pay all of the cost of my reduced showering time—but I reap only a minuscule, practically negligible fraction of the benefits. It seems to me it is important to realize this when we begin to point fingers of blame at ourselves regarding ecological issues. The cost or benefit of my showering decisions is weighed heavily in favour of my taking a longer shower. Contrary to popular rhetoric, no one of us is foolish for engaging in this kind of wasteful behaviour. The situation is like a sort of large-scale prisoner's

dilemma: from a straightforwardly prudential point of view, it would make no sense whatever for me to shorten my showers to any length less than what I found most enjoyable. From a societal point of view of course, it would be sensible for us all, jointly, to reduce our pollution and our consumption. But why would any one of us do it? Why, if it amounts to a self-sacrifice with miniscule impact?

Another way of looking at this problem—the problem of individual consumption that is all but negligible adding up to significant aggregate consumption—is in terms of ecological footprint.[13] The impact I have on the world can be measured as the amount of land area required to support my daily activities. It so happens that taking longer showers, buying home electronics, wearing new clothing, buying imported and packaged food, all amplify my ecological footprint. But these things are trivial to do financially. It costs me very little to amplify my ecological footprint quite out of proportion to my actual living space. This is a blessing and a curse of being a wealthy Westerner.

Now, one might point out that it is also trivial to over-eat: food is cheap here; I can eat lots—I can eat far too much. Certainly many people do overeat, but I understand that it is only half of us, roughly, here in Ontario—whereas almost all of us in Ontario have enormous ecological footprints. The difference seems to be precisely the externality I was just discussing. When I overeat, I incur all or almost all the costs myself; likewise I incur all the pleasure. I am therefore in a position to balance the costs against the pleasure, and work out whatever seems best to me, whether rationally or irrationally. But, when I shower, the reduction in resource usage and pollution I can achieve is tiny—so small that it is questionable whether it is sensible for me to cut short my showers when most people are not going to join me in that action. If I can expect that everyone will join me in some activity which is beneficial in the aggregate—say, recycling—then it seems I should do that. But if it is not likely that a significant number of others will do it, then, at least for the reason of the aggregate benefits—say, reduced pollution from not driving a car—it is not clear that I can be blamed for not making the change.

Let us consider cars for a moment. Practically everyone drives here. If I choose not to drive, the amount by which I reduce smog and greenhouse gas emissions—the amount by which I im-

[13] Wackernagel and Rees (1996).

prove our environment and living conditions as a direct result of that choice—is negligible. Given that others show no signs of making that choice in large numbers, I am incurring a significant cost in terms of inconvenience personally, while providing negligible benefits for the community in the aggregate. So, looked at strictly in terms of the direct public benefits of getting rid of my car, it doesn't appear to be either rational or morally obligatory. It is simply a very high cost with a very small benefit. That is not to say that there might not be other reasons for ceasing to drive—both in terms of indirect benefits to others, and in terms of benefits, direct and indirect, to myself.

6.2.1 "We"

It is a common tack to argue that "we" are bad, in some way, for using the technology that we do. I myself have suggested, for example, that it could amount to a sort of disrespect for the world (chapter 2); it is not uncommon to hear that the technological attitude is somehow blameworthy. In general, the idea often expressed in public discourse in my culture is that "we" need to change, that "we" need to do better, that "we" need to take responsibility for what we are doing to ourselves.

But you and I need to recognize that these phrases support a particular politics. As Feenberg points out, the Keep America Beautiful campaign (and the slogan "People start pollution. People can stop it.") was used by private corporations and other interests in order to shift the locus of environmental responsibility "away from business and toward individual action."[14] To meet environmentalist goals, either individual lifestyles would have to change, or business practices; businesses naturally preferred the former. This relates to the very politically loaded phrase, "personal responsibility", which, again, is often deployed in political discourses to shift focus away from institutional actors, who may in fact contribute significantly to a problem. The underlying message of the "we are bad"/personal responsibility tack is that the problem is what individuals do, not what corporations or other institutions do. Certainly what individuals do can matter and have an impact—but it is also the case that there are powerful institutional forces which contribute far more significantly to some problems.

[14]Feenberg (1999), p. 61.

Discussions of technology often involve claims that "we" have new powers, or new faults. To an extent, this "we" is illusory: what technology does for business owners is quite different from what it does for middle-class North American workers, or again for indigenous people of the "developing" world (further, our technologies tend to reinforce individualism, and so weaken any genuine "we"—I shall come a little later to that argument). For business owners, technology is largely a means of increasing productivity, deskilling, and so increasing profits; it is a means of problem-solving designed to maximize the profitability of a certain sort of production: it is productive technology that creates products for consumption. For consumers, particularly in the West, technology provides consumption goods. We consumers of the wealthy nations do not typically use technology to produce anything ourselves. We use it for leisure and for labour-saving around the home. For people of the developing world, technology ("modern" technology, that is) may appear relatively little in either the home or in their own productive activities: it often appears as a foreign-owned investment used to profit in a way that does not help those who actually live there. It is also worth noting and remembering, whenever claims get made about what technology has done for "us" or about what "we" can now do, that it is often governments, and in particular the military, that support new technological developments. The space programme, for example, is arguably a military venture. So when we are told that "we" have been on the moon, we should recognize that most of us have not, and that those who have were put there in part for political purposes. Likewise, much of the good money in technological research and development is available in military contracts. It might not be going too far to say that the new powers that technology gives are first and foremost employed by those who are already powerful, to maintain and extend that power. The notion that "we" have new powers glosses over the power disparities that exist in technological societies.

For these reasons, I think we should stop pretending that we are all guilty for global warming, etc. Most of us are far more victims than perpetrators. Certainly, most of the world's population contributes less than I do to global warming, and is likely to suffer more from its consequences. Certainly, I contribute less than some who are situated in more powerful places in my society, and who are less likely to suffer from its consequences. I may contribute, and you may contribute, but it is misleading and puts our energy in the wrong place to blame ourselves.

My interests here are not in blame at all. Instead, I want to shift the focus to questions of empowerment and dis-empowerment. I want to recognize that many of us want to make social change, but are frustrated in our attempts to do so. Many of us as individuals or families also want to be leading lives different from the ones we are leading, and are frustrated too in these attempts. What I want to ask about is not whether we are shirking some responsibility, but how we can gain more power to make the changes we would like to see, and to live the lives we would like to live.

6.3 Delegate Technology and Society

Before we turn to this question of how technology affects our power as individuals, it is worth noting that there are broader patterns, and problematic ones, associated with delegate technology.

I have said that delegate technologies hide networks of things and people behind their interfaces—while at the same time connecting us to them. Bruno Latour's definition of "modern" is analogous, and he offers a suggestive hypothesis. "Modern", claims Latour, designates two separate practices.[15] On the one hand, and explicitly, moderns *purify*: nature is to be cleanly divided from culture (and the various areas of human inquiry likewise cleanly separated). On the other hand, moderns *hybridize*, or *translate:* we join together nature and culture in ever-expanding networks. According to the explicit doctrine of the moderns, there are natural things (investigated by science) and there are cultural things (which are the province of sociology). But more and more, Latour claims, the things we encounter are nature-culture hybrids. The explicit and solid line is constantly being broken beneath the surface. Recall, from chapter 4, that Actor Network Theory holds that networks of actors are created by, simultaneously, simplification and juxtaposition of entities: enrollment in networks implies hybridization, as human and non-human things are brought into mutual relation and definition. What Latour is saying, then, is that modernity is a matter of ever-more extensive and complex networks of actors—networks whose existence must always be denied. Like delegate technologies, the modern stance does two things at once: it connects, and it turns our attention away from those very connections. Latour's hypothesis about

[15] Latour (1991), pp. 10–12.

hybridization and purification is that "the second has made the first possible: the more we forbid ourselves to conceive of hybrids, the more possible their interbreeding becomes." The more our networks of action are hidden, the more they will grow. Conversely, we could only bring these "monsters" under control by recognizing their presence. Hybrids are "monsters" for two reasons: first, simply because they are combinations forbidden by the practice of purification; and second, because they are growing uncontrollably. It is not that hybridization, connection, or networks of actors are bad in themselves: rather, it is the way they run rampant when not acknowledged. So, we have an (illusory) abstraction feeding a growing network.

I have already discussed in the last chapter how side-effects and errors can result from abstraction. Now we see that abstraction can help extend the networks through which we act: the problem is compounded. The "proliferation of hybrids" means that the likelihood of significant errors—ones that propagate in unpredictable ways along my social and technological networks—increases as those networks extend themselves and I become less and less attuned to the fact of that extension. An abstract interface creates two problems: it causes errors when abstraction fails, and it extends the likely reach of those mistakes. As many of us act together in this extensive but hidden way, the results could be disastrous. If, on the other hand, our connections to actor-networks around us is concrete, both our relation to the network and the network itself are likely to be more manageable.

Generally, the ability to respond appropriately to environmental and other problems may suffer if we are separated too much from "the physical experience of survival."[16] Susan Griffin argues that middle and upper-class people, particularly men, are "shielded from evidence of human embeddedness in the earth."[17] The result is that we lose "a strong visceral reaction to environmental disaster, the bodily intelligence necessary to survival."[18] By separating us from "natural exigencies", our ways of life allow a "cultural construction of reality" to step "into the foreground": bad (ecocidal and misogynist) theory fills in the spaces left after earthly connection is suppressed. Delegate technology, then, may allow society to substitute for reality a wishful and dangerous illusion—and environmental crisis is the likely outcome.

[16]Griffin (1995), p. 44.
[17]ibid., p. 43.
[18]ibid., p. 44.

Delegate technology has a broad social relevance, then, a relevance from the policy-maker's point of view. It seems to me that we (nationally, globally) ought to want to bring into the open the extent of our networks, to encourage technological design that makes connections more clear, rather than hiding them from us. A move to this sort of technology should help reduce the number of unforeseen wide-scale consequences of technological development such as global warming and ozone depletion. Unfortunately, I am not convinced that those who have the power to see such policies implemented have a sufficient stake in doing so. In general, those who influence policy may be more likely to see the benefits than the costs of errors proliferating among our hybridized networks. If this is the case, then we are pushed back to the issue of individual power. How can individuals and groups among us achieve changes of this sort?

6.4 Hidden Power

I want to continue the discussion of how technology affects our interaction with the powerful—with those people or institutions that are in powerful positions in our society—by noting how power is obscured by delegate technologies, even at the same time it is intensified. Behind the technologies I typically use, my connection to the powerful is utterly obscured: I can run my water, use the Internet, cook in my non-stick frying-pan without any contact with the people or the institutions that have most influenced how those technologies have developed and how they are used, and who reap many of the benefits from my use of them. When those powerful people or institutions are threatened by leftist arguments, i.e. when it is suggested that we ought to tax the corporations that benefit from damaging our environment, that we ought to impose stronger regulations on polluters, the response often amounts to this: "you'll lose your (mechanical) slaves!" All of my technological delegates—my mechanical slaves around my house and in my life—are cheaply available to me because, in part, of a system that does not insist that environmental costs are borne primarily by those who generate them. My power, the argument goes, depends on theirs. My little power in my home depends on their big power in society. That my easy access to certain benefits depends on a degree of freedom for those who produce these benefits, freedom to reap profits from them despite any negative consequences—the flip side of this argument

(whatever its merits) is that my choice to rely on delegate technologies is also a choice to give this power.

We can think of technology in terms of a trickle-down model, which we can compare to the trickle-down economic model that suggests my life is best enriched by the far-greater enrichment of the far richer. The trickle-down picture of technology recognizes that technology has almost exclusively been developed for the initial benefit of those who already had wealth and power. These, after all, were the ones controlling the necessary resources. The benefits to most individuals have been a by-product, a sort of scrap of food dropped off the table. The master-slave metaphor for technology—of technological delegates as our slaves—takes on a particular significance in this light: I can now have servants to do my housework, mechanical ones, that allow me to experience some of the prestige formerly reserved for those who could afford human servants or slaves. So we have two senses in which technology trickles down: in the one sense, we use technology to emulate the lifestyles of the well-to-do; in the other sense, technological advances originate mostly in the service of violence or profit and then trickle down to the consumer level—aren't we lucky that we got Teflon from the space programme?[19] The powerful got cruise missiles.

Because our lifestyle depends so much on technologies, we must buy from richer and more powerful people and institutions who then reap the benefits of this large-scale consumption; we are thus dependent on these rich and powerful interests. The more dependent we are on their products, the better, from the point of view of a profit-making corporation. So businesses ought rationally to aim to make consumers dependent on their product. The engineer can help in this process (willingly or not) by making the product a solution to a Problem (i.e. a set of parameters that must be satisfied). Because the product is a solution to a Problem, it problematizes the consumer's world: the interface presents the world as that problem, forces the consumer to operate in terms of that parametrized model of reality, and thus separates the consumer from the community of human and non-human others in respect of that activity. The consumer, of course, experiences this separation as a sort of mastery. So, it is this sort of mastery—my ability to have little mechanical household slaves—that makes me as a consumer depend on the delegate, the product, rather

[19]It turns out Teflon is probably carcinogenic (a possibility which its manufacturer reportedly worked to hide for over twenty years), so maybe our gratitude was hasty.

than on the environment and the human community. And, by depending on the product, I depend on the manufacturers and the maintainers. So, we might say, by selling us mastery, businesses make us slaves.

It is worth noting in passing also, the illusion of choice created by the distribution system from which we get our daily technologies. Distributors create and maintain this illusion of choice by providing a large number of products—but in fact, a very limited range of solutions is usually available. One might say that only one way is sold to do most things, and that is by means of a manufactured delegate.[20]

Another way of looking at the proliferation of hybrids, combined with the parametrizing, abstracting, hiding face of delegate technology, is that our dependence on others becomes hidden. It is easy, after all, to be "master of all one surveys" if one does not survey much. We may feel ourselves to be masters in our own domains, in our own private spaces, because everything there responds to our control. But this mastery is an illusion: it is created by the separation of that private space from the enormous network of dependencies on which we in fact rely. In this way, technology hides not only our daily collaborations in the nearby world—it hides not only the agency of things in general—but also the agency of powerful people and institutions: whatever powers lie behind the technologies in my home, they are never encountered in my daily doings.

So, technology hides our subjugation—the fact that some of us are benefiting little relative to others, and paying more relative to others. It also hides our complex dependence on others—a dependence that is increasing via the extending networks that result from these very technologies.

I have mentioned my technologies as functioning in my private realm, my domain, my home. I mentioned above Susan Griffin's contention that the domestic sphere shields people, particularly higher-class men, from "embeddedness in the earth." She notes the masculine ideal of independence, and argues that "in this scheme, the private realm of domestic life becomes a place to hide dependency.... In order to conceal the dependency of Western *man* on earthly process, private life must be carefully bifurcated from public life."[21] Although Griffin emphasizes *man* because she is concerned with male attempts to appear independent, her remark applies to women too, if not

[20]Compare Ivan Illich's (1973) notion of "radical monopoly": certain technological systems (e.g. automotive transportation) become so institutionalized that one cannot effectively choose to go without them.

[21]Griffin (1995), p. 76.

always in the same way as to men. The domestic sphere is where earthly survival and reproductive needs are met—traditionally by women. To free men from this dependence on women and the earth, it is necessary both to hide this dependent life in the private sphere, and to subjugate the housewife who is delegated to handle it—though with the modern technologies of the household, women too can enjoy the isolation of the private realm. At present, this bifurcation of private from public, it seems to me, is achieved largely by means of delegate technologies; these are the basis of privacy as most of us experience it. We live in "technological havens"—in realms that seem free of politics, even of the necessity for social interaction (outside the family). And yet, there are relationships with many others involved in our private activities. The technologies make my home seem private by hiding the very widespread interactions that enable my day-to-day doings.

We seem to be very fond of this privacy around here. But we should recognize the extent to which our private possibilities are dependent on delegation. We can choose, now more than ever, never to leave the house, and seldom ever to encounter another person; certainly we seem less than ever to be caught up in negotiations with other people. But the fact that I can get my goods by Internet shopping does not mean that there are no shopkeepers. My ability to exist in a sort of technological haven—sheltered from the weather as from society—depends on a whole series of technological delegates, as well as the many people who are employed behind them. These delegates abstract from my relations with these people. Thus, I have my privacy, but it is a technologically mediated privacy—a privacy that is merely an abstract layer atop a very deeply interpersonal set of operations.

The result is that technological relations come to replace political ones. Instead of negotiating with the people who are involved in my activities, I work with machines that act as my delegates to carry out those negotiations–often indirectly through other machines and institutions. Collaboration with machines comes to replace collaboration with other people and other parts of the world. Thus, one result of these hidden dependencies is that, as Griffin notes, "authority is almost always elsewhere."[22] In superficially freeing our private realms from their contexts, we hook up to a system in which power is held at a distance within the institutions that control our technological infrastructures. The *politics* in my life—the negotiation of shared activities with others—is

[22]Griffin (1995), p. 94.

what is hidden by the delegate technologies that create my private realm. Our politics is given away to our mechanical delegates.

Television provides us with an example. Consider alternate ways to meet one's social needs: one can do it by going out with people; one can also do it to an extent by watching television—travellers who are alone typically turn on the TV in a hotel room, and feel less alone. On moving out on my own from roommates some years ago, I recall being very happy for the privacy—the freedom from the need to negotiate with the foibles of others that I happened to live with. At the same time, though, I missed the readily-available company. I joked at the time that the ideal would be to have a closet full of friends: a little door that I could open, and have my friends tumble out and be friendly whenever I wanted them, and close them back in and have my privacy and my space, and my freedom to engage in only my own foibles whenever I wanted. Now this, in fact, is a rather good description of a television: it is a sort of companion that is disposable in Borgmann's sense: it can be on or off on a whim. I can have my "Friends" when I want them. But, of course, I now depend on the TV, along with all those many more people involved in the production, transmission, maintenance, and construction activities that bring me my disposable companions.

The movement of delegation is exactly parallel for human and non-human others. With respect to humans, our technologies become political delegates—they hide us from some interpersonal relations—while making us ever more dependent on other people. With respect to non-humans, our technologies separate us from the material, while making us ever more dependent on material things (we are dependent on more material things, on more labour- and resource-intensive material things, and in the most general sense—i.e., including ecological and social costs—on more expensive material things). Our political and material relations are intensified at the very time that they appear to be diminished.[23]

[23]How does delegate technology affect our notions of self? I have mentioned the idea that the self and it's doings are basically relational, rather than atomic (chapter 3). I take it that there is truth in this picture, that is that my being is indeed determined partly by my relationships with people. This is less true if I live in a sort of technological haven. Here, it is relationships with technologies that count. So, while the self remains relational, to the extent that we live with delegate technologies, it is technological relations, and not personal relations, that come to define our being.

On the other hand, my needs are usually met through people too. This, in contrast to the relationality of the self, is *more* true in a technological haven. At the same time, my needs are met more automatically. I depend on far more people to get my needs met: the technologies I use are complicated and labour intensive, and depend on infrastructures that involve many people. But, because I work through an interface, my interaction with these people is handled

6.5 Dependence as Power

If attempts to free us from dependence on others by means of technological delegates turn out, and through no coincidence, to lead only to increased dependence on others, then we may wonder: might one not have more power when one is explicitly dependent on others? Freedom, then, would involve dependence on others. The immediate question is how this sort of dependence is different and better than the hidden dependence of the private person in her technological haven. What I shall suggest is that *concrete dependence is freedom*. Independence is always abstract, and really a dependence on technologies or some other sort of delegate. Dependence is concrete when our connections with others are alive, when we tend to acknowledge and consider them.

We can start by recalling Marcel's comments on autonomy (see chapter 4). He distinguishes between autonomy, heteronomy, and non-autonomy. The first two are the classic Kantian opposition, which Marcel sees as grounded in the same objectifying attitude to the world: life is a sort of estate to be managed, either by me (autonomously) or something else (heteronomously). Non-autonomy is true freedom, and is a matter of being fully engaged in one's life and one's world—the state of the artist at work is Marcel's key example.

Why might dependence give us, as individuals, some sort of power, some sort of ability to achieve things? One answer is that by making our collaboration with various others an explicit and central part of our operations, we can achieve a sort of serendipity—we can sometimes make things "easier" than "easy" but abstract solutions. Consider, for example, a flyer I recently encountered for the "EasyZone" diet. This is presumably the "Zone" diet, only "easy". What does the target of this advertisement want? Easiness: freedom from the vagaries of health and its intimate relation with one's way of life—for her body (the target is certainly female) to become an object on which the technology of the diet can work. Now consider an alternative solution: my "sell your car" diet (which consists in selling one's car, and nothing more). The results of this approach are perhaps less predictable, but it has the advantage of being, in a certain sense, even more automatic than the paraphernalia of "EasyZone". Why? Because without the car, one is forced into negotiation with distance, travel, and one's body. A host of small (at times, certainly,

automatically. I set the controls, and the hidden others carry out the appropriate actions. It seems to follow that these people, on who we invisibly depend, are necessarily subjugated. Technological privacy is a sort of unfreedom for everyone else, an approximation of the mastery of an atomic individual.

annoying) issues must now be dealt with—issues whose non-mechanized solution involves the body more intimately in everyday life, no longer as a Problematic appendage, an object to be fixed, but as a part of one's being. Such a solution, I think, is serendipitous (conducive to lucky coincidence) because it is concrete.

When we are concretely connected with the others around us, we are likely to find serendipitous solutions. We are also likely, I think, to find solutions to several problems at once. Maria Mies suggests this idea in the context of "non-commoditized satisfiers": ways of meeting real needs that do not depend on industrially-produced items bought in the market. Such satisfiers, she notes, often "have the advantage of being synergetic: satisfying several needs simultaneously. Taking time to play with children [rather than using television or mass-produced toys] answers various needs: for affection, for protection, for understanding, for leisure, freedom, identity."[24] The category of non-parametric technologies no doubt overlaps that of non-commoditized satisfiers; such technologies will similarly tend to be synergetic.

I have a friend who chooses not to drive, and who, because of this, has increased negotiating power in certain situations. In particular, she cannot be expected to appear in another city at a time that the bus schedule does not allow. So, by choosing not to drive, in general, we begin to exert power over the infrastructure that rewards driving. By forcing people to accommodate to us as non-drivers, we begin to have an impact on that infrastructure. By infrastructure that rewards driving, I mean the fact that our cities are laid out such that it is fairly easy to drive to whatever services one needs, but walking or biking is often much more difficult. The things we need are not placed close to where we live, but rather are placed close to convenient driving routes. The automobile abstracts from physical geography, and replaces actual proximity with driving time. It is no coincidence that cars damage the environment: it is the environment that they hide. But by refusing to drive, one returns to a geography in which distances take on more appropriate weight. A relatively small number of people could perhaps tip the balance in this way: it might not take all of us, or even a majority of us, to stop driving, before there was a great deal of pressure on an infrastructure that currently punishes other means of transportation. In this sense, the power of

[24]Mies and Shiva (1993), p. 256. A similar idea is Gilles Simondon's notion of concreteness, which for him is the ability of a technology to perform more than one function at once. Andrew Feenberg suggests concreteness in this sense as a possible gauge of technical progress (Feenberg, 1999, p. 216ff.).

each individual can be amplified in this sort of intervention—if we want to call it an intervention; it is also, of course, a lifestyle change that as I've pointed out above has individual benefits in terms of health, and perhaps also in terms of appreciation of one's environment, even if that environment for the moment contains an unfortunate proportion of concrete.

I think the idea of negotiation is a good way of explaining how this works. By making myself rely on the world more directly, I force it into negotiation. This is particularly true of the people I deal with, of course. By not driving, I am forced to deal with certain facts, such as distance, from which the automobile tends to abstract—but because others interact with me, those people also become connected with those facts, through me. This, I take it, was my friend's point when she told me of her experience: if one does not drive, one cannot be expected to be ubiquitous or place-less; thus, others, too, must, for her sake, readmit a more complete geography. So, by connecting myself, I connect others too.

This suggests a tactic, then. I may be able to increase my own power by choosing technologies of explicit reliance, of connection with non-humans and with humans. The result of such choices is that the whole technological and social network becomes forced together at my locus. Delegate technologies insulate or isolate sections of the network from each other. They act like airlocks or firewalls. They appear in the network as isolating nodes: from one side of the node, one sees nothing further, and one can act as though there is nothing further. That is the sort of behaviour they encourage and even demand, as parametric interfaces force us to operate in a way that abstracts from the network lying beyond the nodes immediately around us. What we can do—you and I—is aim to be connecting nodes, nodes that because of the people and technologies with which we choose to work, draw together the network—nodes that rather than hiding the network on one side from that on the other, force the network on one side into contact with that on the other. In this way, by choosing technologies that emphasize collaboration and dependence, we exert power over the technological, social, and institutional system. In this sense, power is dependence.

I should recall here two themes from earlier in this chapter. First, I argued above that the aggregate costs of our day-to-day activities do not provide a compelling reason for us to change our behaviours: the amounts of pollution and resource usage associated with my showers is so

small, relative to the enjoyment I get from them, that they alone are not sufficient to conclude that I ought to change my behaviour—still less that it would be prudent to do so. However, it may nonetheless be a good idea to change, for the reason that I have just discussed: by choosing different technologies, by changing our lives piecemeal in this way, we can empower ourselves. That may well be worth considerable inconvenience (as may the unexpected delights across which we may stumble).

Second, the idea that we are too individualistic, too atomistic, too lacking in connection with one another and the world is very common. What I take to be my contribution here is the notion that it is to a significant degree a technological position, not to be addressed by a change in attitude or simply by *trying* to be more connected or more community-focused—but in significant part by replacing some of our technologies with others: by you and I looking over the technologies we use day-to-day and the practices we engage in, and considering which of those practices we can change, and which of those technologies we can replace.

Now, it may be objected here that my emphasis on uniting and connecting threatens to submerge the self. Just as attacks on the subject/object dichotomy threaten to leave us without a basis for action, could not the doctrine that "dependence is power" do the same? If we insist that connection is the source of all power, then must we not abandon any attempt to empower *ourselves*? The difference here is that I am not attacking differences and distinctions, even separations in general. Recall that we distinguished between good and bad abstraction in terms of the "live-ness" of the abstraction: the extent to which it is open to revision and likely to trigger re-constitution based on its intrinsic connectedness to its origins. The technologies of separation I am cautioning against embody dead abstractions; conversely, to be a connecting node is not to abandon the distinction between one's self and others, but to bring to life the actual connections between various people and things. It will always help when a tension like this—separation against connectedness—appears, to go back to concrete situations and consider how these ideas apply. I do not see any sense in which walking instead of driving threatens the integrity of one's self, or one's ability to act as an individual. It may cause one to rely more on others, and it certainly reduces an illusory freedom, the freedom of the atomic self—that independence which comes of abstracting away from the social and technological infrastructure underlying automo-

tive travel. But, one is just as much able to contribute to the collaborations one finds oneself in when one does not drive a car. So, in describing this as a connection, as being a connecting node, I am not implying that all separation between one's self and others may or ought to disappear. That tension sounds problematic only in the abstract.

6.6 Technology and Democracy

If all is not well with technology today, three kinds of responses have been suggested. First, perhaps we need better values: we need, it is often claimed, to subordinate efficiency and progress to more basic human values, or to escape from the technological attitude—but I have been emphasizing why this alone is not a sufficient answer. Second, perhaps we need better control: technologies are necessarily deployed by those who control the required resources; currently, this control is in the hands of economic and political elites; the sphere of genuine democratic control should therefore be extended to include control of technology.[25] Third, though, if artifacts are not neutral, then we also need better design: not just elites, but all those potentially concerned, should have a say in how technologies are developed. Research, development, and deployment, then, would be public matters—not primarily the right and responsibility of the free market. Of course, it is not enough that design be democratized if governments are not effectively democratic: after all, much research and development *is* carried out with public funds—for military purposes. I suspect that more people than not would agree, even on reflection, that this is not the best course.

In his *Questioning Technology*, Andrew Feenberg adopts this third position: we need design that is better and more democratic. We have seen that designs are underdetermined by technological constraints: design is a social process, involving conflict between various interests. The resulting artifact is thus a reflection of the interests that succeeded in dominating the design process. There is not, then, any necessary rational outcome of design: the "iron cage" of instrumental rationality is a myth. Feenberg takes this lesson from the social constructivist school and applies the political concerns of critical theory: technology should be redirected in the service of the

[25] In principal and in practice, this suggestion has much in common with the democratic socialist ideal: democratic control should extend to the means of production. Langdon Winner exemplifies this sort of approach to technology.

many, rather than the few. The resulting idea is "democratic rationalization": design, as contention between interests, is political, and this politics should be made explicit and democratic.[26]

I find myself much in agreement with Feenberg's discussion, so it is worth pointing out where I see mine as supplementing his. We both agree with the claim that the various actors in a technological network are subject to abstraction, or simplification. For him, this is a political resource: those institutions that wield power through technological networks inevitably underestimate the ability of people and others within those networks to do the unexpected, and that is a political resource, and a possible avenue for democratic action. Without denying this, what I want to emphasize is that abstraction is not just a source of possible political agency, but is agency-limiting insofar as it requires us to operate in abstraction from the network of political relations in which we are in fact involved. It gives me power if distant actors underestimate me, but it gives them power if I fail to see them.

Second, what I am offering, in Feenberg's terms, are some ideas about how to *guide* democratic rationalization. Feenberg argues that we can affect the design of technologies, but he doesn't discuss in detail what makes a good design. From the point of view of empowerment of individuals, of democracy, are there any principles that ought to guide the designs we seek or the designs we choose to adopt and use? His main suggestion is perhaps "concretization", in Simondon's sense (the tendency of designs to handle more than one function at once)—but Feenberg sees this as much as a tendency in design as a design goal appropriate to democracy. My suggestion is that the notion of dead abstraction and parametric interface, as contrasted with interfaces that leave negotiations open, provides us with a tool with which to compare technological possibilities, and may sensitize us to ways in which we can adopt technologies that empower, rather than dis-empower us. It is not just that design*ing* should be democratized: *designs* can be more democratic too.

In conclusion, let us consider a larger question. Dis-empowerment of the many, it might be pointed out, is a feature of civilization in general: all known civilizations (as distinct from nomadic, hunter-gatherer, or subsistence-farming cultures) have featured social stratification—a

[26]Feenberg (1999), p. 131. What form might this democracy take? Feenberg argues against Richard Sclove that populist, participatory control of modern technology is not feasible: technologist-managers will still be necessary, but only with democratic oversight. I am inclined to favour Sclove's position, but the debate lies beyond our present scope.

small, powerful elite, and a relatively powerless base. So one might question whether empowerment and dis-empowerment have anything to do with particular technologies.

First, I would not rule out the possibility that ancient technologies also achieved a sort of delegation that aided the powerful—but I am more interested in another possibility. Second, we can note that technologies of production tend to intensify stratification by increasing profits; and, if, along with Marx, we take profits to be the modern form of the tithes that supported the ancient elite, then it is technology today that maintains the same overall structure.

But there seems to be more than this. Our technologies of daily life alienate us, and weaken us politically, I have argued. They make us more like objects and less like subjects. In this sense, they are an aid to political oppression of whatever form. So, if modern democracies are unique in their enfranchisement of all citizens, perhaps technologies are now required to maintain the oppression that was before achieved by other means. This is a suggestion Foucault makes in discussing techniques of surveillance and bio-power.[27] Foucault argues that technologies replace the role of the death penalty and the violent sovereign (in particular, his central example is the architectural technology of the prison). So, along these lines, we might suggest that *either* dictatorship *or* delegate technologies are sufficient to keep the powerful powerful. If that is the case, then the sort of revolution many have hoped for, that would upset power structures without simply replacing them, might have failed to come about with the rise of democracy in part because of the technologies in place, to which we unwittingly delegated much of our political power. So, then, if our technologies were to emphasize collaboration, perhaps true revolution would finally be possible.

I believe I have shown how technologies permeate and influence our daily doings, and how, consequently, a change in ways of life is also a technological change. I have also tried to identify a common pattern in design—problematization, the hiding effect of parametric interfaces—and its political consequences: such technologies hide the humans and non-humans to which they connect us; we unwittingly delegate our politics to them. I have not attempted to say just what designs would empower us. Developing and choosing politically transparent, empowering technology is, on the one hand, an engineering task to which the above discussion could provide

[27] See, e.g., Foucault (1995).

direction; and, on the other hand, a personal task in which you and I are engaged, day-to-day—whether purposefully or accidentally.

It is certainly the case that some delegates do not serve us well politically, and we might be wise to take back powers we have given away to them. If it seems odd that a technological change could be a revolutionary step, we must remember that a change in technology is—unlike a mere change in attitude—a change in how we do things.

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